Product: Oblique™ Weatherboard - 200 & 300mm alternating

JamesHardie™

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Fibre Cement Products from James Hardie Pty Ltd

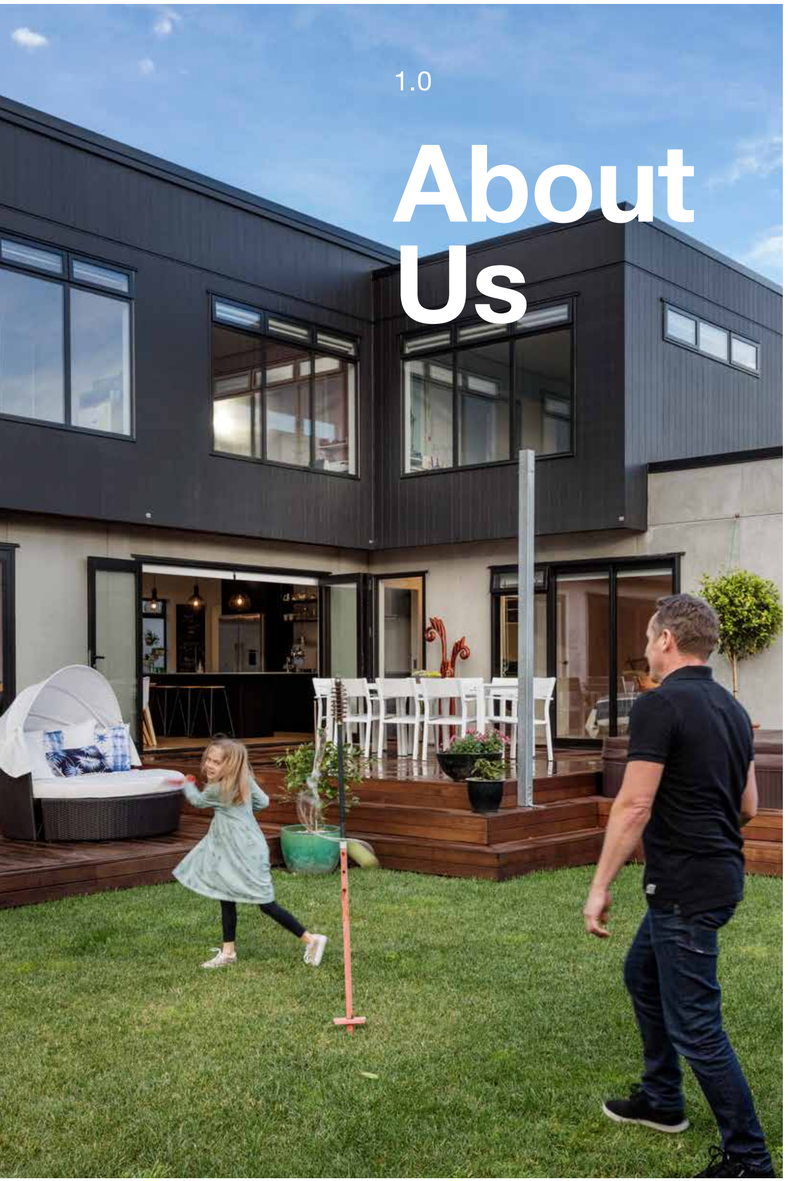
Program: EPD Australasia — www.epd-australasia.com
Program Operator: EPD Australasia
EPD Registration Number: S-P-03582
Publication date: 17.07.2023
Valid until: 17.07.2028

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

AUSTRALASIA EPD® ENVIRONMENTAL PRODUCT DECLARATION

ECO PLATFORM

Contents



1.0

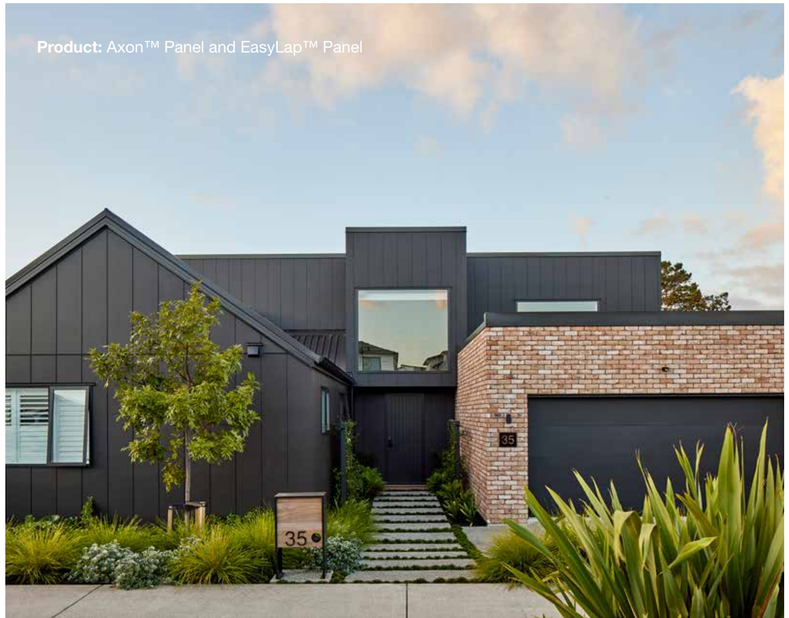
About Us

James Hardie understands building professionals, and serves them with innovative building products and solutions. As an industry leading manufacturer of fibre cement products, James Hardie empowers its people to innovate and capitalise on the company's global scale. As a trusted industry leader, James Hardie is committed to transforming the way the world builds through innovative, durable, and more sustainable solutions.

Always driven to find a better way to build, James Hardie applies a continuous improvement mindset to research and development, manufacturing, and sales. Our sustainability efforts are no different, with manufacturing waste, water usage and energy being a major focus of our sustainability improvements. James Hardie helps inspire and deliver beautifully designed homes and buildings that are durable, functional, and easy to build.

James Hardie's innovative and durable solutions combine lasting beauty and endless design possibilities with trusted protection and low maintenance. Key to this effort is James Hardie's drive to develop quality solutions that are built to last, improving the liveability and streetscape for homeowners and communities alike.

Product: Hardie™ Groove Lining



Product: Axon™ Panel and EasyLap™ Panel

Shaping a More Sustainable Future at James Hardie

Product: Alternating profiles of Oblique™ Weatherboard

Our Sustainability Strategy was formalised in FY21 and is integrated with our Global Strategy for Value Creation and Operational Performance. It focusses on four key pillars of Communities, Environment, Innovation and Zero Harm.

Embedded in a foundation of Zero Harm*, James Hardie's approach to sustainability puts people first with a focus on safety. Investing in a culture of safety strives to ensure our employees and business partners get home safely to their families, every day.

James Hardie's disciplined approach to lean Manufacturing delivers both strong operational and sustainability performance through cutting down on waste and inefficiencies.
From cultivating teamwork and empowerment in our people to resource conservation and waste reduction in our processes including water usage and production waste, James Hardie helps build better homes, with less. This in turn enables James Hardie continues to develop products that support sustainable and thriving communities around the globe.

During the fiscal year 2021, we continued our relentless drive to improve our ESG processes and practices such as eliminating coal from our Carole park facility and saving over 10 million cubic feet of water in Australia over a four year period. In doing so, we have made significant progress on our sustainability reporting journey.

*Our goal is to remain at the forefront of the building products industry in every market in which we operate. Key to this effort is our dedication to our customers, who we serve through industry-leading innovation, an empowering company culture, and by capitalizing on our global scale. The foundation of this strategy, and our company identity, is an unwavering commitment to safe people, safe places and safe systems through our Zero Harm initiative. For more information please refer to jameshardie.co.nz

1.0

Integrated Approach to Sustainability

James Hardie is leading transformation to deliver greater value to our consumers and the community. Our global strategy for value creation embeds the sustainability principles and practices that inform our Environmental, Social and Governance (ESG) strategy.


Product: Linea™ Weatherboard


Product: Stria™ Cladding

The leadership position we earn within the New Zealand market every day extends to our sustainability objectives and our aim to be a leader in sustainability performance and reporting:

We deliver long-term value through our high-quality, built-to-last products

Product design and innovation considers sustainability-related impacts and ongoing enhancements. Our lightweight building products are designed to be durable and easy to install, helping to create resilient communities and withstanding variety of harsh climates.

We understand our role in building sustainable local communities where we operate. Our operations support local communities, employ locally, and to the extent possible, source locally, supply locally and give locally.

Lean Manufacturing promotes resource conservation and waste reduction.

Our people are at the heart of all we do. Fostering of engagement and a culture in which people can thrive promotes shared success in sustainability initiatives.

The Zero Harm foundation prioritises the safety of our products and employees, partners, customers and communities.

In the coming years, we will continue to develop our sustainability strategy and define the next steps in our ESG journey. Future areas of advancement include improving the quality of our sustainability reporting and Carbon Disclosure Project (CDP) submission using recognised frameworks (GRI Standards, SASB Sustainability Accounting Standards and TCFD recommendations), growing our internal ESG team, strengthening systems, setting targets in reducing our environmental footprints and planning initiatives to meet our goals and reduce our impact on climate change.

1.0

Commitment to environmental reporting


Product: Linea™ Weatherboard

James Hardie uses recognised standards and methods as the basis for communicating relative environmental credentials with clients and stakeholders. James Hardie understands its role in providing standardised, trusted, and comprehensive data and information. James Hardie was an early adopter of Life Cycle Analysis (LCA) with a first LCA completed in 1999. We believe this leadership position and transparency will not only set an example for industry, but also help all building professionals make better and more informed choices.

James Hardie has decided to adopt the Global Reporting Initiatives (GRI) framework. The GRI framework will produce a framework to report on material topics, their relative impacts and how they are managed, and is the one of the most widely adopted framework for Environmental, Social and Governance reporting.


Product: Stria™ Cladding

2.0

Hardie™ Fibre Cement Products

James Hardie understands building professionals and homeowners alike, providing them with innovative, sustainable building products and solutions built for tough New Zealand conditions.

Sustainable, trusted protection

James Hardie continulously strives to be more transparent in it’s supply chain by reporting via the EPD, enabling customers to truly understand the impact of using our products. By specifying our products, you can take comfort in knowing that James Hardie delivers low-maintenance and highly durable materials.

Key Benefits of Hardie™ fibre cement products*

- Design versatility
- Easy to paint
- Resistant to moisture damage
- Low maintenance
- Durable
- Fire resistant
- Weather resistant
- Easy to Install

Warranty

James Hardie’s products are backed by Warranties. Refer to Product Specific Warranties, available at jameshardie.co.nz, for further details.

* when installed and maintained in accordance with James Hardie’s published literature current at the time of purchase.

Product Range & Descriptions

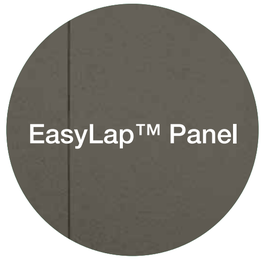
EXTERIORS

Hardie™ Flex Sheet

Hardie™ Flex Sheets are 6mm thick natural, un-sanded sheets used to achieve a traditional panel look in external cladding applications.

Hardie™ Flex Eaves Lining

Hardie™ Flex Eaves Lining are a 4.5mm thick, square edge sheet produced in a range of sheet sizes to accommodate both wide and narrow soffits.



EasyLap™ Panel

EasyLap™ Panel is a 9mm thick, pre-primed fibre cement sheet with a shiplap joint along its two vertical edges. Can be finished with paint, texture or battens.

Hardie™ Plank Weatherboard

Hardie™ Plank Weatherboard is a no-fuss, 7.5mm thick fibre cement weatherboard, perfect for cost-effective home extensions, renovations or full cladding on new builds.

ExoTec™ Façade Panel

ExoTec™ Façade Panel is a 9mm thick, high density fibre cement sheet, suitable for low rise andhigh rise commercial building facades, fascia’s and soffits.

Please refer to the James Hardie website for more product specific details including product sizes and other technical information.

Product Range & Descriptions

EXTERIORS

Axon™ Panel

Axon™ Panel is a range of 9mm thick vertically grooved panels. Easy to install, robust and versatile, Axon™ Panel is a clever alternative to traditional vertical shiplap weatherboards.

Stria™ Cladding

Stria™ Cladding is a 14mm thick fibre cement product with shiplap joints that leave a distinct 15mm wide groove for strong clean lines. It can be laid horizontally or vertically, allowing for greater design versatility.

Linea™ Weatherboard

Linea™ Weatherboard is an innovative and durable 16mm thick bevel-back weatherboard. The superior durability, low maintenance and design flexibility set this product apart from its weatherboard alternatives.

Oblique™ Weatherboard

Oblique™ Weatherboard is a 14mm thick ship-lapped weatherboard with a splayed edge. It comes in two widths and can be used in both horizontal and vertical applications enabling you to create a range of different looks and designs.

Hardie™ Panel Compressed Sheet

Hardie™ Panel Compressed Sheet is an 18mm thick, high density, fibre cement structural flooring substrate for ceramic tile finishes over timber or lightweight steel floor joists.

Please refer to the James Hardie website for more product specific details including product sizes and other technical information.

Product Range & Descriptions

EXTERIORS

RAB™ Board

Is an all in one bracing, airtight and fire resistant rigid air barrier available in 6 or 9mm. The inherent strength of RAB™ Board makes it an ideal product for use in shear wall design in residential or commercial specific design projects. Identifiable by the green water repellent sealer to keep moisture out.

HomeRAB™ Pre-cladding

HomeRAB™ Pre-Cladding is a cost-effective, 4.5mm thick fibre cement rigid air barrier. For use in residential builds to provide resistance to gusting wind to reduce draughts and identifiable by the green water repellent sealer to keep moisture out.

Please refer to the James Hardie website for more product specific details including product sizes and other technical information.

Product Range & Descriptions

INTERIORS

Secura™ Interior Flooring

Secura™ Interior Flooring is a 19mm thick high performance structural floor, offering the robust feel of concrete with the speed of timber installation. It's engineered to address the complete range of performance needs for residential and light commercial floors.

Villaboard™ Lining

Villaboard™ Lining is a high-performance fibre cement board that creates a seamless flat surface which can be painted, wallpapered or tiled to provide a variety of looks. Available in 6mm or 9mm it can also be used externally on eaves and soffits.

Hardie™ Ceramic Tile Underlay

A 6mm thick smooth, stable internal underlay for laying tiles, slate and vinyl over existing or new flooring. It minimises tile movement and potential tile cracking caused by the expansion and contraction of wood-based flooring substrates.

Hardie™ Groove Lining

Hardie™ Groove Lining is a 7.5mm thick, tongue and groove sheet with the durability of fibre cement. It can also be used externally on eaves and soffits.

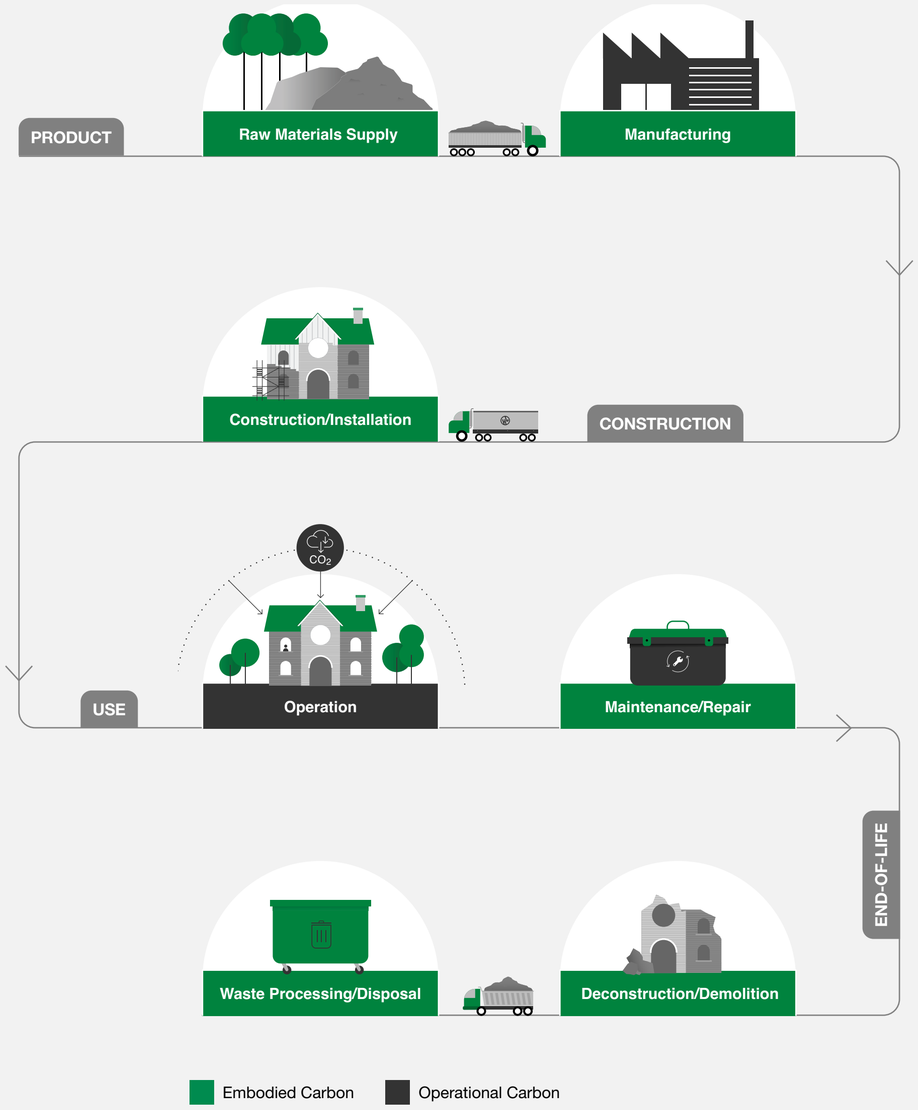
Please refer to the James Hardie website for more product specific details including product sizes and other technical information.

3.0

Our commitment to innovative, durable and more sustainable solutions

Globally, the construction industry faces a number of challenges, with buildings and construction accounting for nearly 40 percent of energy-related carbon dioxide (CO_2) emissions and have significant impact on our natural habitats. Carbon emissions, commonly referred to as embodied carbon, are released not only during operational life but also during the manufacturing, transportation, construction and end of life phases of all built assets – buildings and infrastructure.

According to the World Green Building Council, embodied carbon in buildings contributes around 11 percent of all global carbon emissions. The remaining 29 percent results from the energy used to power, light, cool and heat buildings during use - also known as operational carbon. During the operation phase, fibre cement products capture CO_2 from the environment.The graphic to the right highlights the phases where embodied and operational carbon are released.



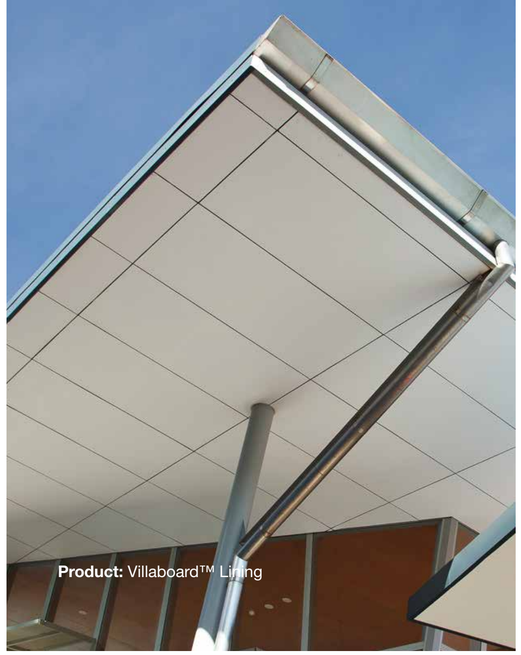
3.0

Overcoming Challenges Together

There are several major challenges for industry to be able to deliver buildings with lower life cycle carbon and environmental impacts, healthier environments for the occupants, ethical labour practices in supply chains and resilience against extreme weather events.

At James Hardie, we are committed to reducing environmental impacts and believe leading a disciplined approach to Lean Manufacturing helps us build better homes, with less. Our lightweight construction systems consist of lean pre-fabricated materials, engineered to be energy and resource efficient in their manufacture. James Hardie's product design and innovation considers sustainability related impacts and ongoing enhancements that deliver lasting beauty and endless design possibilities.

James Hardie can assist with ensuring minimal on-site wastage by helping designers, architects and builders optimise sheet layout and designs for maximum coverage and minimum wastage. James Hardie's Lean Manufacturing promotes resource conservation and waste reduction, providing building professionals and homeowners with the trusted protection and low maintenance they need, whilst reducing the environmental impact of their builds.

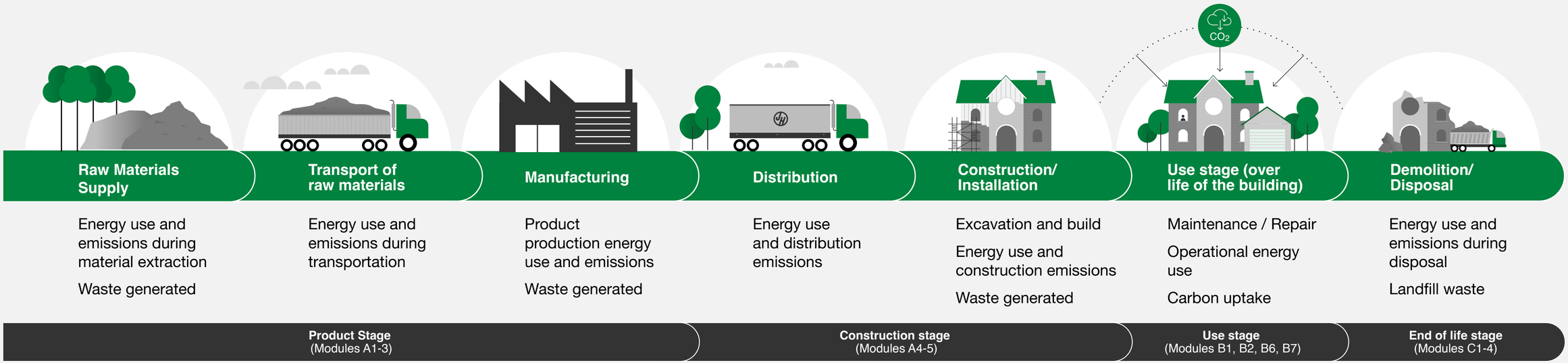


Product: Villaboard™ Lining

Product: EasyLap™ Panel and Axon™ Cladding

3.3

James Hardie's Life Cycle Assessment



James Hardie's role in providing trusted and comprehensive data and information

As an industry leader in the production of fibre cement building solutions, James Hardie understands its role in providing trusted, and comprehensive data and information in an easy and accessible format.

Research shows that our lightweight and durable products often have significant advantages and contribute to a resilient built environment. To deliver buildings with healthier environments for the occupants, James Hardie strives for continual improvements to manufacturing processes to reduce the environmental impact of our products over their full life cycle.

James Hardie is committed to working with architects, builders, and homeowners to assist them in arriving at bespoke solutions that meet both their environmental and design needs.

At James Hardie we believe this leadership position and transparency will not only set an example for industry, but also help all building professionals and homeowners make better and more informed decisions.

3.1

How this EPD can be used in rating schemes for both Commercial and Residential projects in New Zealand

James Hardie's credentials, information and transparency can be used to obtain credit points under NZGBCA's Green Star rating tools for both residential and commercial projects, specifically relevant to the Life Cycle Impacts and Responsible Building Materials credits.

Commercial – Green Star

Green Star is the most commonly applied voluntary green building rating scheme in Australia and New Zealand. It was created by the Green Building Council of Australia (GBCA) and adapted for use in New Zealand by the New Zealand Green Building Council (NZGBC). The rating tool can be used for every type of commercial project across New Zealand, with differing scoring systems across the various rating tools (Green Star Buildings, Design and As Built and Interiors). Each tool consists of a number of mandatory minimum requirements and optional credits.

Once all the mandatory minimum requirements are met, you can then choose any other combination of credits to reach the points required for the rating being targeted.

The building needs at least 45 points to achieve a 4 Green Star rating, which is the minimum standard that can be certified and is deemed Good Practice. A 5 Green Star rated building is deemed New Zealand Excellence. A 6 Green Star building exemplifies world leadership.

Residential – Homestar

Homestar is an independent rating tool developed by the New Zealand Green Building Council (NZGBC) in 2010 to assess the health, efficiency and Sustainability of homes across New Zealand.

The Homestar system rates a homes performance and environmental impact against the current building standards set by the New Zealand building code.

The homestar system uses an accumulating points system across four categories; Efficiency, Healthy and Comfortable, Liveable, Environmentally Responsible. Each category has set criteria which a project can meet to gain points up to a category maximum.

James Hardie's Fibre cement products and EPD documents contribute to Homestar ratings gaining points though;

Compliance with EN3: Sustainable Materials:

- A product specific EPD contrite 1.25 points towards a maximum of 10 points in this category maximum. Product specific EPD's to qualify for these points mush be issued in conformance with ISO 14025 or EN15804, be independently verified and be based on a cradle-to-gate scope as a minimum.

For more information about Green Star and Homestar rating schemes please refer to the NZGBCA website https://www.nzgbc.org.nz/

4.0

Life Cycle Assessment Information

Program information

Program: EPD Australasia

315a Hardy Street
Nelson 7010
New Zealand

w: www.epd-australasia.com
e: info@epd-australasia.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction products (EN 15804+A2) (1.11); UN CPC Code: 37570, 2021-02-05, ANZSIC 2031

PCR review was conducted by:
The Technical Committee of the International EPD® System.

Moderator: Martin Erlandsson, IVL Swedish Environmental Research Institute,
e: martin.erlandsson@ivl.se

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☑ EPD verification

Third party verifier

Joana Almeida

In case of recognised individual verifiers:

Approved by: EPD Australasia Ltd

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☑ No

EPD type: Manufacturer-specific EPD

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD

James Hardie Australia Pty Ltd

Headquarters

10 Colquhoun Street Rosehill NSW 2124

Contact Person:
Mat Skembes - Head of Environmental, Social and Governance APAC

Manufacturing locations

Rosehill
10 Colquhoun Street Rosehill NSW 2124, Australia

Carole Park
Cobalt St, Carole Park QLD 4300, Australia

Contact information

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Product Information

TABLE 1 PRODUCT INFORMATION

Product Characteristics			
Product	**Product use**	**Panel Nominal Thickness (mm)**	**Weight (kg/m²)**
Hardie™ Flex Sheet	Cladding for external walls	4.5	5.4
Hardie™ Flex Sheet	Cladding for external walls	6	7.2
Hardie™ Flex Eaves Lining	Residential eaves lining	4.5	5.4
EasyLap™ Panel	Residential eaves lining	9	11.04
Hardie™ Plank Weatherboards	Cladding for external walls	7.5	9.0
ExoTec™ Façade Panel	Commercial façade panel	9	13.7
Axon™ Panel	Cladding for external walls	9	10.2
Stria™ Cladding	Cladding for external walls	14	15.4
Linea™ Weatherboards	Cladding for external walls	16	17.6
Linea™ Oblique™ Weatherboards	Cladding for external walls	14	15.36
Hardie™ Panel Compressed Sheet	Compressed structural flooring substrate	18	31.0
Secura™ Interior Flooring	Structural interior flooring substrate	19	20.8
Villaboard™ Lining	Internal wall lining	6	7.2
Villaboard™ Lining	Internal wall lining	9	10.8
HomeRAB™ Pre-Cladding	Rigid Air Barrier to be installed as pre-cladding	4.5	5.4
RAB™ Board	Rigid Air Barrier to be installed as pre-cladding	6	7.2
RAB™ Board	Rigid Air Barrier to be installed as pre-cladding	9	10.8
Ceramic Tile Underlay	Internal flooring underlay for ceramic tile finishes	6	7.2
Hardie™ Groove Lining	Internal wall and ceiling lining	7.5	9.0

UN CPC code: CPC 3757

Detailed product information and supporting evidence including SDS is available on https://www.jameshardie.com.au/technicalLibrary.

LCA information

James Hardie's LCA calculates the environmental footprint at each of the following stages: product, construction, use, and end-of-life. All the significant environmental impacts associated with the product, including the impact on water, air, land and climate change are reported based on international ISO LCA standards.

This product declaration is based on the report "James Hardie New Zealand EPD LCA Background Report" by Edge Environment Pty Ltd and verified by Joana Almeida.

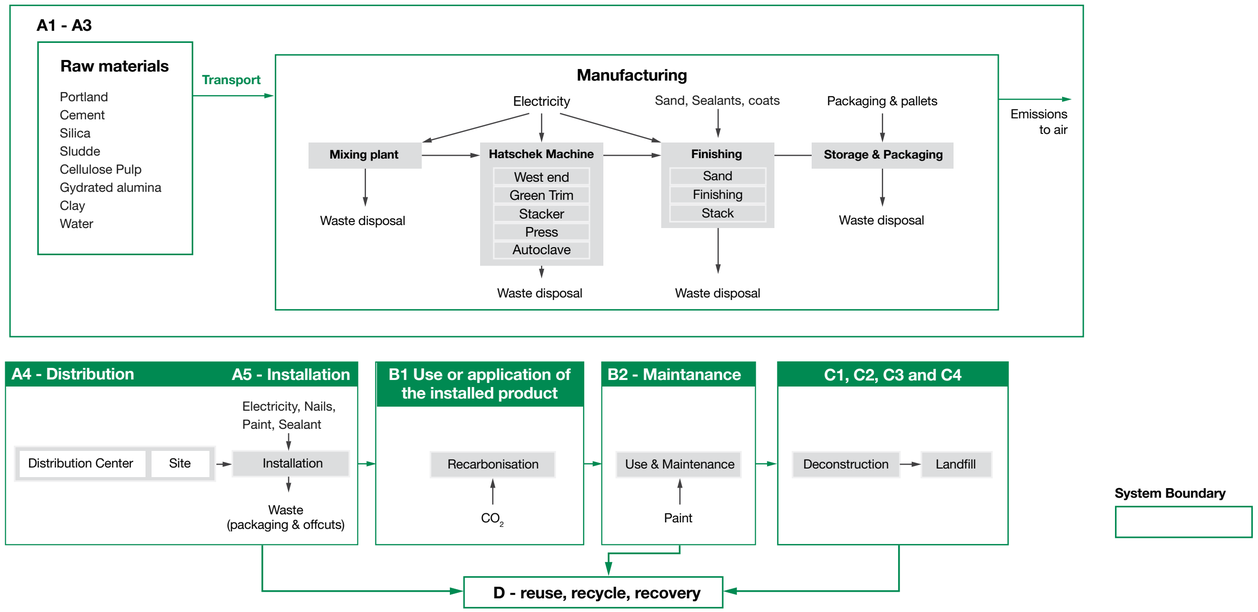
James Hardie products are developed for all environmental condition in New Zealand. In regions subject to freeze/thaw conditions, all James Hardie fibre cement external cladding must be installed and painted in the warmer months of the year where the temperature does not create freeze and thaw conditions or paint issues. The cladding must be painted immediately after installation. In addition, fibre cement cladding must not be in direct contact with snow and/or ice build up for extended periods, e.g. external walls in alpine regions subject to snow drifts over winter. Furthermore, a reputable paint manufacturer must be consulted in regards to a suitable product, specifications and warranty. For installation in coastal regions as well as cyclonic or high wind zones specific or additional fixings may be required. Please refer to the relevant James Hardie installation manual[1] for required fixing and installation specifications. James Hardie products are manufactured in Australia. Full product properties are disclosed on the website. James Hardie provides specific installation guidance on the website[1]. Installation quality that is aligned with the guidance is expected for functional performance. It requires regular maintenance to get the full lifespan. Repainting every 10-15 years is assumed to be a good average. All details are included in the website and manual[1].

[1] jameshardie.com.au

TABLE 2 PRODUCT CHARACTERISTICS

Product Characteristics	
Declared Unit	1 square metre of installed external cladding product over its reference service life (RSL).
System Boundary	Cradle to gate with options, modules C1–C4, and module D with additional modules (A1-A3 + C + D and additional modules). The additional modules are A4-A5 and B1-B2.
Reference Service Life (RSL)	The fibre cement product life is assumed to be 50 years, except for Villaboard™ lining with a product life of 60 years.
Geographical Coverage	New Zealand
Time Period	Foreground was provided first-hand by James Hardie for CY21 (2021-01-01 to 2021-12-31)
Databases used	Ecoinvent v3.8 (all background data is less than 10 years old)
Software	SimaPro (v9.1.1.1)

FIGURE 1 SYSTEM DIAGRAM



Product Characteristics

TABLE 3 THE LIFE CYCLE OF A BUILDING PRODUCT

Product Characteristics								
GPI Module	**Asset life cycle stage**		**Modules declared**	**Geography**	**Specific data used**	**Variation - Products**	**Variation – Carole Park to average**	**Variation – Rosehill to average**
Product stage	A1	Raw material supply	X	AU	>90%	No relevant	GWP-GHG indicator varies between 14% and 17%	GWP-GHG indicator varies between -17% and 0%
	A2	Transport	X	AU				
Construction process stage	A3	Manufacturing	X	AU				
	A4	Transport	X	AU				-
	A5	Construction installation	X	AU				-
Use stage	B1	Use	X	NZ	-	-		-
	B2	Maintenance	X	NZ	-	-		-
	B3	Repair	ND		-	-		-
	B4	Replacement	ND		-	-		-
	B5	Refurbishment	ND		-	-		-
	B6	Operational energy use	ND		-	-		-
	B7	Operational water use	ND		-	-		-
End of life stage	C1	Deconstruction and demolition	X	NZ	-	-		-
	C2	Transport	X	NZ	-	-		-
	C3	Waste processing	X	NZ	-	-		-
	C4	Disposal	X	NZ	-	-		-
Resource recovery stage	D	Reuse-Recovery-Recycling potential	X	AU	-	-		-

ND = not declared

The following life cycle stages are deemed not applicable for James Hardie: Repair (B3); Replacement (B4); Refurbishment (B5); Operational energy use (B6); Operational water use (B7); and Waste processing (C3). The scenarios included are currently in use and are representative for one of the most likely scenario alternatives

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

The life cycle of a building product is divided into three process modules according to the General Program Instructions (GPI) and four information modules according to ISO 21930 and EN 15804 and supplemented by an optional information module on potential loads and benefits beyond the building life cycle, as given in following table.

Content Information

TABLE 4 MATERIAL CONTENT

Material Input	Percent composition for 1kg of product
Cement (100% portland)	25-40%
Silica (sand)	42-64%
Sludge (pre-consumer recycled material)	0-4%
Cellulose Pulp	7-11%
Hydrated Alumina	2-4%
Coatings – primer & paint[2]	Confidential
Water	-
Packaging for 1 m² of product	
Gluts	0 – 1.14 kg
Pallet	0 – 0.012 kg
Slat	0 – 0.051 kg
Lid	0 – 1.2E-3

Table 4 lists the main materials used to produce fibre cement. None of the products contain one or more substances that are listed in the “Candidate List of Substances of Very High Concern for authorisation”. According to the PCR 2019:14, if one or more substances of the “Candidate List of Substances of Very High Concern (SVHC) for authorisation” are present in a product and their total content exceeds 0.1% of the weight of the product, they need to be reported. Safety data sheets are available on https://www.jameshardie.co.nz/resources/technical-literature. Biogenic carbon content in product is 0.035 - 0.055 kg C per kg product. No recycled materials included in packaging. Biogenic carbon content in accompanying packaging is 0 - 0.006 kg C per m² product. It is assumed 500 g biogenic carbon in 1 kg of cellulose pulp and pallets. Hexavalent Chromium Cr (VI) (CAS 1333-82-0) can be present as a trace element in cement (<50ppm) however this value is diluted in finished fibre cement products as cement only makes up a portion of our raw materials.

[2] Coatings are included in the model. Due to the data confidentiality, details are not reported here.


Product: Villaboard™ Lining

Raw Materials, Packaging, and Transportation from Supplier (Module A1 and A2)

The inventory data collected from James Hardie for production year 2021 is available below. In summary, the panels are produced from:

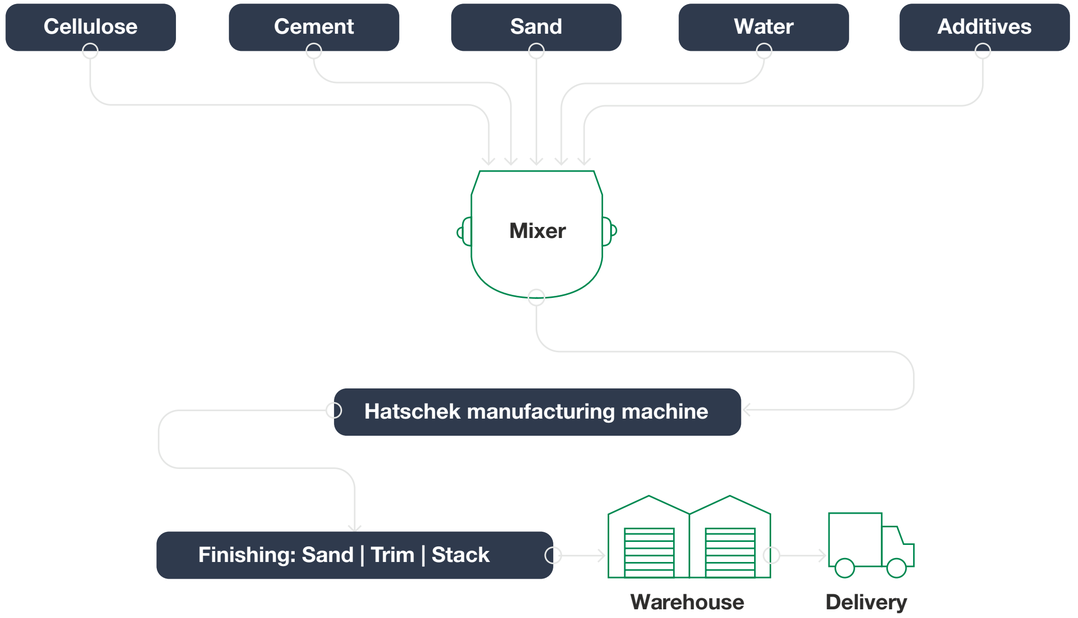
- Cement, cellulose pulp, silica, hydrated alumina, sludge (from internal recycling) and water.
- Cement used in Rosehill manufacturing site sources from Boral. Boral has done an internal LCA study to quantify environmental impacts. In this study, carbon emission factor (0.872 kg CO_2e/kg cement) is obtained from Boral directly. The Boral emission factor substituted the factors for impact category Climate change (GWPT), Climate change – Fossil (GWPF), and Global warming (GWP 100a) (GWP-GHG). The Boral GWP data is provided to James Hardie as a specific calculation for GWP in line with their recent EPD, since James Hardie's cement is slightly different mix to their typical products. Other environmental performance values for cement were taken from AusLCI generic portland cement dataset since it is not available from Boral, which is a conservative approach.
- Scyon Stria and Scyon Linea production also uses a density modifier additive in addition to the above.
- Typical production process includes the use of energy (electricity, gas, diesel, etc.), flocculants, resins and steel balls.
- Energy consumption and water consumption were allocated to each product based on actuals consumption in CY 2021 and Standard Meter (STM, 1 STM is 4.5mm*1000mm*1000mm worth of material). Diesel consumption in Rosehill is forklifts fuel. Diesel consumption in Carol Park includes forklifts and boilers for autoclaves.
- The cellulose pulp is assumed to have 12.2 MJ/kg as renewable energy resource used as raw material, based on the energy density quoted for biomass municipal and industrial materials in the National Greenhouse Accounts Factors (Department of the Environment, 2021).
- Additional materials, including primers and paints, are based on Bill of Material (BOM) in CY 2021 and STM.
- Typical packaging, including gluts, pallet, slat, and lid, is based on BOM for Australia.
- Interleaver rates and reject sheet rates for CY 2021 have been applied to all the products.

Panel Manufacturing (Module A3)

Typical production process includes the use of energy (electricity, gas, diesel, etc.). Energy consumption was allocated to each product based on its portion of the overall yearly production (in STDM) for each production site. Electricity is modeled with the regional grid of each plant location.

The fibre cement manufacturing process produces a durable and workable product by a process that reduces the curing time compared to air-cured concrete products. James Hardie uses a mixture of cement, sand, water and cellulose fibre, sourced from sustainably-grown Pine trees. Small amounts of other chemical additives are used to help the process, or provide products with particular characteristics. This means that Fibre cement has our trusted level of durability, fire, impact and moisture resistance, and aren't susceptible to rot or termites like conventional fibre panels. Figure 2 shows the manufacturing process

FIGURE 2 MANUFACTURING PROCESS



CONTENT INFORMATION

TABLE 5 GLOBAL WARMING POTENTIAL (GWP) OF ELECTRICITY GRID MIX FOR MANUFACTURING LOCATIONS[3]

Electricity mix, Queensland	Grid mix (%)	Emission factor (EF) (kg CO_2-e/kWh)
Electricity, hydropower, at reservoir power plant, non alpine regions/RER U/AusSD U	1.0%	0.006
Electricity, bagasse, sugarcane, at fermentation plant/BR U/AusSD U	0.0%	0.021
Electricity, bagasse, sugarcane, at fermentation plant/BR U/AusSD U	1.2%	0.021
Electricity, biogas, allocation exergy, at micro gas turbine 100kWe/CH U/AusSD U	0.0%	0.280
Electricity, biogas, allocation exergy, at micro gas turbine 100kWe/CH U/AusSD U	0.2%	0.280
Electricity, black coal QLD, at power plant/AU U	79.5%	0.953
Electricity, natural gas, CC, at power plant/AU U	7.5%	0.454
Electricity, natural gas, GT, at power plant/AU U	3.0%	0.595
Electricity, coal seam methane, at power plant/AU U	2.1%	0.850
Electricity, coal seam methane, at power plant/AU U	0.9%	0.850
Electricity, oil, at power plant/UCTE U/AusSD U	0.1%	0.902
Electricity, production mix photovoltaic, at plant/US U/AusSD U	4.1%	0.061
Electricity, at heat pump 30kW, allocation electricity/CH U/adapted/AU U	0.4%	0.520
Total	**100%**	**0.788**
Electricity mix, New South Wales	**Grid mix (%)**	**EF (kg/kWh)**
Electricity, hydropower, at reservoir power plant, alpine region/RER U/AusSD U	4.4%	0.006
Electricity, at wind power plant 2MW, offshore/OCE U/AusSD U	2.7%	0.016
Electricity, bagasse, sugarcane, at fermentation plant/BR U/AusSD U	0.2%	0.021
Electricity, bagasse, sugarcane, at fermentation plant/BR U/AusSD U	0.4%	0.021
Electricity, black coal NSW, at power plant/AU U	84.0%	0.911
Electricity, natural gas, CC, at power plant/AU U	2.5%	0.454
Electricity, natural gas, GT, at power plant/AU U	0.9%	0.595
Electricity, oil, at power plant/UCTE U/AusSD U	0.1%	0.902
Electricity, production mix photovoltaic, at plant/US U/AusSD U	3.7%	0.061
Electricity, biogas, allocation exergy, at micro gas turbine 100kWe/CH U/AusSD U	0.5%	0.280
Electricity, biogas, allocation exergy, at micro gas turbine 100kWe/CH U/AusSD U	0.1%	0.280
Electricity, at heat pump 30kW, allocation electricity/CH U/adapted/AU U	0.1%	0.520
Total	**100%**	**0.0841**

[3] Data source: AusLCI System Shadow Database v1.27. (AusLCI, 2017)

The GWP of the assumed electricity grid mix corresponding to the manufacturing locations in Queensland and New South Wales is given in the following table. Unit process retrieved from AusLCI, Carole Park: electricity, high voltage, Queensland/AU U; Rosehill: electricity, high voltage, New South Wales/AU.

Transport (Module A4)

Transport distances and loads from the James Hardie gate were calculated based on James Hardie's annual state sales data for production year 2021. For modelling purposes, various conservative assumptions for inter-state and local distribution distances were made as follows:

- 3021 km sea transport from Australia to New Zealand
- 200 km additional regional distribution

TABLE 6. PANEL INSTALLATION OUTPUTS FOR 1M² OF PRODUCT

Installation (A5)	Waste product	Construction waste	Packaging waste-wood (Gluts, slat, pallet)	Packaging waste-carton (Lid)
Unit	**%**	**kg**	**kg**	**kg**
Hardie™ Flex Sheet 4.5mm	10%	5.38E-01	2.54E-01	0.00E+00
Hardie™ Flex Sheet 6mm	15%	1.08E+00	2.39E-01	0.00E+00
Hardie™ Flex Eaves 4.5mm	10%	5.39E-01	1.68E-01	0.00E+00
EasyLap™ Panel 9mm	15%	1.70E+00	4.31E-03	0.00E+00
Hardie™ Plank Weatherboards 7.5mm	8%	7.17E-01	4.92E-03	0.00E+00
ExoTec™ Façade Panel 9mm	15%	1.62E+00	4.22E-01	0.00E+00
Axon™ Panel 9mm	15%	1.46E+00	4.33E-03	0.00E+00
Stria™ Cladding 14mm	15%	2.22E+00	6.39E-02	0.00E+00
Linea™ Weatherboards 16mm	8%	1.35E+00	7.71E-03	0.00E+00
Linea™ Oblique™ Weatherboards 14mm	8%	1.19E+00	9.92E-02	0.00E+00
Hardie™ Panel Compressed Sheet 18mm	15%	3.06E+00	5.57E-01	0.00E+00
Secura™ Interior Flooring 19mm	15%	2.87E+00	7.30E-03	0.00E+00
Villaboard™ Lining 6mm	15%	1.10E+00	2.00E-01	0.00E+00
Villaboard™ Lining 9mm	15%	1.65E+00	2.33E-01	0.00E+00
HomeRAB™ Pre-Cladding 4.5mm	15%	8.12E-01	1.39E-01	0.00E+00
RAB™ Board 6mm	15%	1.08E+00	2.83E-01	0.00E+00
RAB™ Board 9mm	15%	1.62E+00	1.96E-01	0.00E+00
Ceramic Tire Underlay 6mm	5%	3.75E-01	3.38E-01	0.00E+00
Hardie™ Groove Lining 7.5mm	15%	1.40E+00	4.42E-03	0.00E+00

TABLE 7. PANEL INSTALLATION INPUTS FOR 1M² OF PRODUCT

Life Cycle Stage	Input	Unit	Quantity
Installation	Panel Installed	m^2	1
	Electricity[4]	kWh	0.20
	Galvanised Nails/ screws[5]	kg	0.08
	Silicon or polyurethane sealant[6]	kg	0.05
	e joint setting[7]	kg	0.05
	Texture Coating[8]	kg	1.49
	Paint	kg	0.17

Installation (Module A5)

The panel installed waste rates have been provided by James Hardie. The construction waste and packaging waste, including gluts, pallet, slat, and lid, were calculated based on waste rates.

The following assumptions have been used in this study to model panel construction:

- Energy (electricity) consumption for construction and deconstruction has been calculated based on the consumption of 0.2 kWh of electricity per m^2 of panel installed, which is assumed to be a conservative estimate based on up to 6 minutes of power tool usage (average 2kW power rating).
- Nails/Screws unit process includes MSW incineration process for metal manufacturing, which is not applicable to New Zealand. Therefore, we have modified the Metal working factory operation, average heat energy/RER U/AusSD U under Nails/Screws process by changing MSW incineration to sanitary landfill.
- Galvanised Nails/ screws, e joint setting, polyurethane sealant, texture coating, and initial paint is included.
- Waste varies from 7% - 15% for different products. Those goes to landfill 100%.
- Packaging goes to landfill.
- Exclusion: saw blades, nail gun cartridges, tapes, extrusions, and flashings are excluded due to the minimal consumption

[4] Assumptions from previous EPD.
[5] Assumptions from previous EPD.
[6] Assumptions from previous EPD.
[7] The epoxy 'ejoint' is used for ExoTec and HardiePanel Compressed products only.
[8] The texture coating is only relevant for EasyLap in Australia, but not for EasyLap NZ.

TABLE 8. PANEL USE INPUT TO GCCA TOOL FOR 1M² OF PRODUCT

CONTENT INFORMATION

Recarbonation (B1)

Carbonation is a natural process whereby concrete absorbs carbon dioxide (CO_2) from the atmosphere through a chemical reaction between the CO_2 in the ambient air and hydration products within the concrete ($CaOH_2$). Concrete products can be subject to carbonation from the use stage onward (i.e. after construction and curing). From a life cycle impact accounting perspective, this process can also be referred to as 'reabsorption', since the CO_2 emitted during the cement manufacturing process can be partly offset by the lifetime absorption of CO_2, therefore reducing the net CO_2 emissions associated with the concrete over its lifetime.

This LCA report has used the Global Cement and Concrete Association's (GCCA) tool for quantifying carbon reabsorption. This tool was developed with Quantis and is available at https://gccassociation.org/sustainability-innovation/environmental-product-declarations/. The results are included in the GWP-fossil, GWP-T, and GWP-GHG indicators.

Coating and paint used at James Hardie for all products are breathable. This means that they allow both water vapor & CO_2 to pass through. When the board was vapor sealed, bubbles would form under the coating and effecting or warranty. James Hardie has tested US market samples from Fiber Cement product that has been collected from multiple different job sites, where they test the carbon to show that this all does occur and the amount of recarbonation is not an overestimation. A confidential letter has been provided to the verifier during the verification process. On the issue of coatings being breathable, the US have a 6-sided sealant process where New Zealand has only a 5-sided process. The US products that have been tested do show the carbonation occurs even with the 6-sided sealant. Therefore, the result from GCCA tool should be a good estimation for James Hardie New Zealand products

Assumptions

- Outside and inside areas are exposed to air
- All products (except Interior) assume exposed to rain
- Interior panels assume sheltered
- The fibre cement product life is assumed to be 50 years, except for Villaboard™ Lining and Versilux™ lining with a product life of 60 years.
- 100% has been assumed for Degree of Carbonation (Dc %) from EN16757 and GCCA tool. James Hardie has done lab test to show this is not an overestimation.

Use Phase (B1)	Service life	Average exposed surface during service life, per declared unit	Exposure conditions	Density
Unit	**yrs**	**m^2/ m^3 of ready-mix concrete**		**Kg/m^3**
Hardie™ Flex Sheet 4.5mm	50	444.44	Exterior	1200.00
Hardie™ Flex Sheet 6mm	50	333.33	Exterior	1200.00
Hardie™ Flex Eaves Lining 4.5mm	50	444.44	Exterior	1200.00
EasyLap™ Panel 9mm	50	222.22	Exterior	1226.67
Hardie™ Plank Weatherboards 7.5mm	50	266.67	Exterior	1200.00
ExoTec™ Façade Panel 9mm	50	222.22	Exterior	1523.75
Axon™ Cladding 9mm	50	222.22	Exterior	1130.83
Stria™ Cladding 14mm	50	142.86	Exterior	1096.88
Linea™ Weatherboards 16mm	50	125.00	Exterior	1096.88
Linea™ Oblique™ Weatherboards 14mm	50	142.86	Exterior	1097.14
Hardie™ Panel Compressed Sheet 18mm	50	111.11	internal and external	1721.32
Secura™ Interior Flooring 19mm	50	105.26	Interior	1096.88
Villaboard™ Lining 6mm	60	333.33	Interior	1200.00
Villaboard™ Lining 9mm	60	222.22	Interior	1200.00
HomeRAB™ Pre-Cladding 4.5mm	50	444.44	Exterior however not exposed to elements	1200.00
RAB™ Board 6mm	50	333.33	Exterior however not exposed to elements	1200.00
RAB™ Board 9mm	50	222.22	Exterior however not exposed to elements	1200.00
Ceramic Tire Underlay 6mm	50	333.33	Interior	1200.00
Hardie™ Groove Lining 7.5mm	50	266.67	Interior	1200.00

[9]There is enough area behind the board that allows water to drain after installed and dry out behind the boards, so there is air on the exposed and building-side sides.

Maintenance (Module B2)

The exterior facing panel side is assumed to be re-painted (two coats) every 5 or 15 years, over the assumed 50+ year life of the building. Acrylic varnish is assumed to be the paint. 2 layers on one side is required for each re-painting. It is assumed that fibre cement panels have a lifespan of 50+ years and no replacements will be required during the life of the building. There is no planned or expected cleaning of these products.

- Paint – 5 years frequency (only for Hardie™ Deck, for 25 years lifespan)
- Paint – 15 year frequency (for Villaboard and Versilux, for 60 years lifespan)
- Paint – 15 year frequency (for all other James Hardie products, for 50 years lifespan)
- None (Secura™ Interior and Exterior, Hardie™ Panel Compressed Sheet, and Ceramic Tile Underlay)

Deconstruction and End of Life (Module C1, C2, C4)

The cradle to grave environmental profile is based on the assumed most conservative scenario, which is that all the products are dismantled and disposed at inert waste landfill. Edge Environment has assumed 20km delivery distance to landfill, based on the distance from likely construction sites within major cities to main landfill sites for the area. Transport to landfill is modelled based on 50% loaded rigid trucks (no empty return trips). There is no activities under C3, therefore C3 result is 0 for all impact catogories.

100% of the product goes to landfill, therefore no activities are included in Module D. Module D result is 0.

Cut-off rules

All inputs and outputs to a unit process is included in the calculation. Data gaps are filled by conservative assumptions with average or generic data, such as module A5, C. Detailed assumptions are listed in relevant section. According to the PCR 2019:14 and EN 15804+A2, the cut-off criteria shall be 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that unit process. The total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass. Conservative assumptions in combination with plausibility considerations and expert judgement is used in this exercise.

In accordance with the PCR 2019:14, the following system boundaries on manufacturing equipment and employees are excluded:

- Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process are not accounted for in the LCI. Capital equipment and buildings typically account for less than a few percent of nearly all LCIs and this is usually smaller than the error in the inventory data itself. For this project, it is assumed that capital equipment makes a negligible contribution to the impacts as per Frischknecht et al with no further investigation.
- Personnel-related impacts, such as transportation to and from work, are also not accounted for in the LCI. The impacts of employees are also excluded from inventory impacts on the basis that if they were not employed for this production or service function, they would be employed for another. It is very hard to decide what proportion of the impacts from their whole lives should count towards their employment. For this project, the impacts of employees are excluded.

Allocation

According to EN 15804+A2, in a process step where more than one type of product is generated, it is necessary to allocate the environmental stressors (inputs and outputs) from the process to the different products (functional outputs) in order to get product-based inventory data instead of process-based data. An allocation problem also occurs for multi-input processes.

In an allocation procedure, the sum of the allocated inputs and outputs to the products shall be equal to the unallocated inputs and outputs of the unit process.

The following stepwise allocation principles shall be applied for multi-input/output allocations:

- The initial allocation step includes dividing up the system sub-processes and collecting the input and output data related to these sub-processes.
- The first (preferable) allocation procedure step for each sub-process is to partition the inputs and outputs of the system into their different products in a way that reflects the underlying physical relationships between them. This is the allocation approach for manufacturing data.
- The second allocation procedure step is needed when physical relationship alone cannot be established or used as the basis for allocation. In this case, the remaining environmental inputs and outputs from a sub-process must be allocated between the products in a way that reflects other relationships between them, such as the economic value of the products.

Manufacturing data, including energy and water consumption, rejected sheet, and other input and output data at manufacturing stage, are allocated by production volume in standard meter, which takes the product thickness into account, by James Hardie.

Since interlevers and rejected sheet does not have economic value, they are considered as waste.

Data Quality and Validation

The primary data used for the study (core module) is based on direct utility bills or feedstock quantities from James Hardie's procurement records. Edge used contribution analysis to focus on the key pieces of data contributing to the environmental impact categories. The data was benchmarked against relevant benchmark data in Ecoinvent. Edge considers the data to be of high quality for the core module. Data quality level and criteria from the Product Environmental Footprint Category Rules listed in EN 15804+A2 Annex E is used to perform this data quality assessment activity.

Compliance with Standards

The methodology and report format are compliant with:

- ISO 14040:2006 and ISO14044:2006+A1:2018 which describe the principles, framework, requirements and provides guidelines for life cycle assessment (LCA) (ISO, ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework., 2006) (ISO, ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines, 2006)
- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures, which establishes the principles and specifies the procedures for developing Type III environmental declaration programmes and Type III environmental declarations (ISO, ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures, 2006)
- EN 15804+A2:2019: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products (here after referred to as EN15804+A2). (European Standard, 2019)
- Product Category Rules (PCR) 2019:14, v1.11 – Construction products – Hereafter referred to as PCR 2019:14. (EPD International, 2019)
- c-PCR-001 Cement and building limes (EN 16908) (EPD International, 2019)
- c-PCR-003 Concrete and concrete elements (EN 16757) (EPD International, 2019)

TABLE 9 DATA QUALITY ASSESSMENT

Module	Collected foreground data	Source, year	Quality
General	Production volumes per plant Product dimensions Product density	Supplied by James Hardie, 2021	Primary source data, good.
A1	Raw material quantities (feedmix)	Supplied by James Hardie, 2021	Primary source data, good.
A2	Location of suppliers Location of manufacture plants	Supplied by James Hardie, 2021	Primary source data, good.
A3	Energy inputs Waste outputs Packaging use	Supplied by James Hardie, 2021 Distances calculated with GoogleMaps®	Primary source data, good.
A4	Sales data	Supplied by James Hardie, 2021. Distances calculated with Ports,com and GoogleMaps®	Primary source data, good.
A5	Inputs for installation process	Assumptions based on product specification provided in previous EPD	Secondary source data, medium.
B1	Raw material quantities Product type of use (external/internal)	Supplied by James Hardie, 2021 Global Cement and Concrete Association's (GCCA) tool	Primary and secondary source data, fair.
B2	Inputs for maintenance	Assumptions based on product specification provided in previous EPD	Secondary source data, fair.
C1	Inputs for deconstruction & demolition	Assumptions based on product specification provided in previous EPD	Secondary source data, fair.
C2	Distance to end of life destination	Assumptions provided in previous EPD	Secondary source data, fair.
C4	End of life destination	Assumptions based on product specification provided in previous EPD	Secondary source data, poor.

Key Assumptions and Considerations

TABLE 10 ASSUMPTIONS, CHOICES, AND LIMITATIONS

Assumption or limitation	Impact on LCA results	Discussion
Raw material data for panel production is based on generic information.	Significant	The EN 15804 A2 standard permits generic data for upstream processes, however, this is where the main impacts are for panels across the life cycle. The LCI includes supplier specific data for the main components.
Raw material packaging	Minor	For simplicity and lacking comprehensive data, all raw material packaging is excluded in this study.
Energy allocation	Significant	The energy consumptions and other manufacturing data at manufacturing stage are allocated by production volume in standard meter, which takes the product thickness into account, by James Hardie.
Packaging data are given by unit or piece. Assumptions have been made to convert data into mass.	Minor	Given the material and quantities of packaging data (including pallet, gluts, slat, and lid), we converted to mass data by using secondary source data.
Downstream transportation	Minor	The regional distribution distance in New Zealand is assumed to be 200 km to all products which does not reflect the variation in New Zealand market. The study applied an average sea transport from Australia to New Zealand and an average local distribution to all the products. The assumption does not consider the distance differences from manufacturing site to end users.
End of life scenario	Minor	For simplicity and lacking comprehensive data and statistics on the fate of used panels, all panels are assumed to be disposed in landfill after use. We have also done a scenario analysis based on national waste recovery rate (75%) for cement sheeting. This will lead to the impact on Module C4 as well as Module D. For Module D, we have assumed it followed the manufacturing waste from Carole Park pathway, since it is a more conservative case. Based on our analysis, the total carbon impacts of Module C4 and Module D under 75% recovery rate is similar to the impacts of 100% landfill.
Impact threshold and truncation error	Unknown, this study has not attempted to quantify the truncation error.	Impact thresholds and truncation error is a perennial issue for all process-based LCIs. Exclusion of multiple small components in an LCI (even if individually they are below a small chosen % level) can lead to non-negligible overall impacts. This is particularly true when comparing very different options, as is the case of the different types of wall systems.

Environmental Performance

The potential environmental impacts, use of resources and waste categories included in this EPD were calculated using the SimaPro v9.1.1.1 tool and are listed in Table 12. All tables from this point will contain the abbreviation only. The potential environmental performance is calculated based on the input data and the emission factors from Ecoinvent v3.8, AusLCI 2019, and AusLCI System Shadow Database v1.27. The LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds and safety margins or risks.

TABLE 11 LIFE CYCLE IMPACT, RESOURCE AND WASTE ASSESSMENT CATEGORIES, MEASUREMENTS AND METHODS

Impact Category	Indicator/Abbreviation	Measurement Unit	Assessment Method and Implementation
Potential Environmental Impacts			
Climate change - fossil	Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Climate change – biogenic	Global Warming Potential biogenic (GWP-biogenic)	kg CO_2	Baseline model of 100 years of the IPCC based on IPCC 2013
Climate change – land use and land use change	Global Warming Potential land use and land use change (GWP-luluc)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Climate change – total	Global Warming Potential total (GWP-total)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2013
Ozone depletion	Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 equivalents	Steady-state ODPs, WMO 2014
Acidification	Acidification potential, Accumulated Exceedance (AP)	mol H^+ eq.	Accumulated Exceedance, Seppälä et al. 2006, Posch et al., 2008
Eutrophication – aquatic freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP – freshwater)	kg P equivalent	CML (v4.1)
Eutrophication – aquatic marine	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP – marine)	kg N equivalent	EUTREND model, Struijs et al., 2009b, as implemented in Recipe
Eutrophication – terrestrial	Eutrophication potential, Accumulated Exceedance (EP – terrestrial)	mol N equivalent	EUTREND model, Struijs et al., 2009b, as implemented in Recipe
Photochemical ozone formation	Formation potential of tropospheric ozone (POCP)	kg NMVOC equivalents	Accumulated Exceedance, Seppälä et al. 2006, Posch et al.
Depletion of abiotic resources – minerals and metals*	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	kg Sb equivalents	LOTOS-EUROS, Van Zelm et al., 2008, as ap-plied in Recipe
Depletion of abiotic resources – fossil fuels*	Abiotic depletion potential for fossil resources (ADP-fossil)	MJ net calorific value	CML (v4.1)
Water Depletion Potential*	WDP	m^3 equivalent deprived	Available Water Remaining (AWARE) Boulay et al., 2016

[8] EN 15804:2012+A2:2019 specifies that the unit for the indicator for Eutrophication aquatic freshwater shall be kg PO_4^{3-} eq, although the reference given ("EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe") uses the unit kg P eq. This is likely a typographical error in EN 15804+A2, which is expected to be corrected in a future revision. Until this has been corrected, results for Eutrophication aquatic freshwater shall be given in both kg PO4 eq and kg P eq. in the EPD.

[4] Method to calculate Cumulative Energy Demand (CED), based on the method published by ecoinvent version 2.0 and expanded by PRé Consultants for raw materials available in the SimaPro database.

[5] Calculated based on the lower heating value of renewable raw materials.

TABLE 12 LIFE CYCLE IMPACT, RESOURCE AND WASTE ASSESSMENT CATEGORIES, MEASUREMENTS AND METHODS

Impact Category	Indicator/Abbreviation	Measurement Unit	Assessment Method and Implementation
Resource use			
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ, net calorific value	ecoinvent version 3.6 and expanded by PRé Con-sultants PRé Consultants[11]
Use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value	Manual for direct inputs[12]
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ, net calorific value	Sum of PERE and PERM
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ, net calorific value	ecoinvent version 3.6 and expanded by PRé Con-sultantsPRé Con-sultants
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ, net calorific value	Manual for direct inputs[13]
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ, net calorific value	Sum of PENRE and PENRM
Use of secondary material	SM	Kg	Manual for direct inputs
Use of renewable secondary fuels	RSF	MJ, net calorific value	Manual for direct inputs
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value	Manual for direct inputs
Use of net fresh water	FW	m^3	ReCiPe 2016
Waste categories			
Hazardous waste disposed	HWD	Kg	EDIP 2003 (v1.05)
Non-hazardous waste disposed	NHWD	Kg	EDIP 2003 (v1.05)[7]
Radioactive waste disposed/stored	RWD	Kg	EDIP 2003 (v1.05)

[10]EN 15804:2012+A2:2019 specifies that the unit for the indicator for Eutrophication aquatic freshwater shall be kg PO43- eq, although the reference given ("EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe") uses the unit kg P eq. This is likely a typographical error in EN 15804+A2, which is expected to be corrected in a future revision. Until this has been corrected, results for Eutrophication aquatic freshwater shall be given in both kg PO4 eq and kg P eq. in the EPD.
[11]Method to calculate Cumulative Energy Demand (CED), based on the method published by ecoinvent version 2.0 and expanded by PRé Consultants for raw materials available in the SimaPro database.
[12]Calculated based on the lower heating value of renewable raw materials.
[13]Calculated based on the lower heating value of non-renewable raw materials.
[14]Calculated as sum of Bulk waste and Slags/ash.

*Disclaimer – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

TABLE 13 LIFE CYCLE IMPACT, RESOURCE AND WASTE ASSESSMENT CATEGORIES, MEASUREMENTS AND METHODS

Impact Category	Indicator/Abbreviation	Measurement Unit	Assessment Method and Implementation
Additional environmental impact indicators			
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	Kg CO_2 equivalents (GWP100)	CML (v4.1)
Particulate matter emissions	Potential incidence of disease due to PM emissions (PM)	Disease incidence	SETAC-UNEP, Fantke et al. 2016
Ionising radiation – human health**	Potential Human exposure efficiency relative to U235 (IRP)	kBq U-235 eq	Human Health Effect model
Eco-toxicity (freshwater)*	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe	USEtoxt
Human toxicity – cancer effects*	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh	USEtox
Human toxicity – non cancer effects*	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh	USEtox
Land use related impacts / soil quality*	Potential soil quality index (SQP)	dimensionless	Soil quality index (LAN-CA®
Additional environmental impact indicators			
Components for re-use		Kg	Manual for direct inputs
Materials for recycling		Kg	Manual for direct inputs
Materials for energy recovery		Kg	Manual for direct inputs
Exported energy		MJ per energy carrier	Manual for direct inputs

*Disclaimer – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

TABLE 14 GWP-GHG INDICATOR VARIATION BETWEEN SITES FOR A1-A3

Product	Impact Cat (kg CO_2e)	Carol Park (CP)	Rosehill (RH)	Average (weighted by production volumn sold in AU)	Variation – CP and Acerage	Variation – RH and Acerage
AxonTM Panel, 9 mm	GWP-GHG	9.64	NA	9.64	0%	NA
Ceramic Tile Underlay, 6 mm	GWP-GHG	NA	4.77	4.77	NA	0%
EasyLap™ Panel, 9 mm	GWP-GHG	9.80	NA	9.80	0%	NA
ExoTec™ Façade Panel, 9 mm	GWP-GHG	12.05	NA	12.10	0%	NA
Hardie™ Flex Eaves Lining, 4.5mm	GWP-GHG	4.77	4.02	4.77	0%	-16%
Hardie™ Flex Sheet, 4.5 mm	GWP-GHG	4.81	4.07	4.81	0%	-15%
Hardie™ Flex Sheet, 6 mm	GWP-GHG	6.79	5.67	6.79	0%	-16%
Hardie™ Groove Lining, 7.5 mm	GWP-GHG	8.03	NA	8.03	0%	NA
Hardie™ Panel Compressed Sheet, 18 mm	GWP-GHG	32.03	NA	32.00	0%	NA
Hardie™ Plank Weatherboards, 7.5 mm	GWP-GHG	7.84	6.52	7.84	0%	-17%
HomeRAB™ Pre-Cladding, 4.5 mm	GWP-GHG	5.16	NA	5.16	0%	NA
LineaTM Weatherboards, 16 mm	GWP-GHG	16.88	14.24	16.90	0%	-16%
Linea™ Oblique™ Weatherboards, 14 mm	GWP-GHG	14.95	NA	14.90	0%	NA
RAB™ Board, 6 mm	GWP-GHG	6.85	NA	6.85	0%	NA
RAB™ Board, 9 mm	GWP-GHG	10.25	NA	10.20	0%	NA
StriaTM Cladding, 14 mm	GWP-GHG	16.09	13.48	16.10	0%	-16%
Villaboard™ Lining, 6 mm	GWP-GHG	6.12	5.14	6.12	0%	-16%
Villaboard™ Lining, 9 mm	GWP-GHG	9.14	7.73	9.15	0%	-16%
Secura™ Interior Flooring, 19 mm	GWP-GHG	NA	18.20	18.20	NA	0%

The variation between sites for GWP-GHG indicator is between -17% and 0%, as shown in Table 13. Ceramic Tile Underlay (6 mm) and Secura Interior (19 mm) sold in New Zealand are 100% produced in RH. All other products sold in New Zealand are 100% produced in CP.

In summary

Potential Environmental Impacts:

Impacts (excl. Module B):

- Modules A1-A3 (cradle to gate) have the higher contribution to global warming potential - total, ranging from 55% to 84%. Excluding global warming potential - biogenic, module A1-A3 have the highest contributions on global warming potential, acidification potential, eutrophication potential, photochemical ozone formation, and abiotic resource depletion potential - fossil fuels. Within A1-A3 modules, Portland cement is the main contributor, which accounts from 40% to 57%. Energy in the manufacturing of the products is the second higher contributor.
- Module A4 (average transport to New Zealand consumers) percentage contribution ranges from 0.1%% to 44%. A4 is one of the top contributors to ozone depletion potential, ranging from 29% to 44%. For global warming potential - total, A4 contributes from 5% to 11%.
- Module A5 (installation) impact ranges from 3% to 62%. The highest corresponding to water depletion potential, while the lowest comes from eutrophication. For global warming potential - total, A5 contributes from 7% to 29%.
- Module B2 (maintenance) has high contributions on global warming potential – land use and land use change (20%-42%), abiotic resource depletion potential - minerals and metals (40%-59%), eutrophication, freshwater (8%-55%), and ozone depletion potential (12%-28%), due to the acrylic varnish for re-painting. As thickness increasing, B2 contributions decrease. High product weight per square meter increasing by thickness in A1-A3 module leads to high impacts to total environmental impacts.
- Modules C1, C2 and C4 (the end of life stages) have low impact contribution, from 0.002% to 8% on average for the different impact categories.

Benefits (module B1):

- Module B1 (recarbonation) reduces global warming potential – total from 6% to 12%, which reduces embodied carbon for all the products

Use of Resources:

Impacts (excl. Module B1):

- For non-renewable primary energy resources, module A1-A3 has the largest contribution (33%-81%), followed by module A5 (7%-32%), module B2 (12%-27%), and module A4 (8%-19%). For the rest of categories, module A1-A3 is the major contributor.
- Module A1 - A3 has the highest contribution to use of resources, ranging from 33% to 100%. The latter is for use of secondary materials and use of renewable primary energy resources used as raw materials. However, there could be some secondary materials used in other processes that have not being accounted for in this project.
- Modules B2 has the second highest contribution to total use of non- renewable primary energy resources (12%-27%) and freshwater use (4%-10%), because of the acrylic varnish in the painting.
- Modules C1, C2, and C4 have low impact contribution (less than 4% for all impacts).

Benefits (Module B1):

- Module B1 benefits are negligible in use of resources categories.

Waste Categories:

Impacts (excl. Module B1 and D):

- Module A1-A3 has the highest contribution to hazardous waste disposed (79%-96%), mostly because of the pulp as a raw material.
- Module C4 has the highest contribution to non- hazardous waste disposed (52%-86%), because of the selection of the conservative scenario that all the products go to landfill at the end of their lives.
- Module B2 has the highest contribution to radioactive waste disposed (65%-75%). For the products do not require re-painting, module A5 has the most important contribution in the same impact. In both cases the impact is created by acrylic varnish in the paint.

Benefits (Module B1 and D):

- Module B1 and module D benefits are negligible in waste categories.

Environmental Information for Hardie™ Flex Sheet, 4.5 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	4.90E+00	6.92E-01	1.67E+00	-6.60E-01	8.14E-01	5.91E-02	1.15E-02	0.00E+00	1.10E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-3.74E-01	3.93E-04	7.74E-01	0.00E+00	2.26E-02	2.04E-03	1.65E-06	0.00E+00	7.85E-01	0.00E+00
GWP-luluc	kg CO_2 eq.	7.86E-04	2.90E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	8.61E-08	0.00E+00	7.89E-07	0.00E+00
GWP-total	kg CO_2 eq.	4.52E+00	6.93E-01	2.45E+00	-6.60E-01	8.38E-01	6.12E-02	1.15E-02	0.00E+00	8.95E-01	0.00E+00
ODP	kg CFC 11 eq.	7.06E-08	9.35E-08	5.11E-08	0.00E+00	8.31E-08	4.08E-11	1.84E-09	0.00E+00	1.11E-08	0.00E+00
AP	mol H^+ eq.	3.01E-02	1.22E-02	1.35E-02	0.00E+00	1.15E-02	1.50E-04	7.09E-05	0.00E+00	8.66E-04	0.00E+00
EP-freshwater	kg P eq.	1.51E-04	1.39E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	3.69E-07	0.00E+00	3.64E-06	0.00E+00
EP-marine	kg N eq.	7.26E-03	2.41E-03	1.80E-03	0.00E+00	8.63E-04	1.59E-05	1.54E-05	0.00E+00	2.55E-04	0.00E+00
EP-terrestrial	mol N eq.	7.98E-02	2.68E-02	1.88E-02	0.00E+00	8.17E-03	1.75E-04	1.72E-04	0.00E+00	2.79E-03	0.00E+00
POCP	kg NMVOC eq.	2.04E-02	7.45E-03	5.64E-03	0.00E+00	2.83E-03	8.58E-05	5.95E-05	0.00E+00	8.24E-04	0.00E+00
ADP-minerals & metals*	kg Sb eq.	2.87E-06	9.81E-07	1.90E-05	0.00E+00	1.38E-05	2.36E-09	3.59E-08	0.00E+00	4.42E-07	0.00E+00
ADP-fossil*	MJ	1.72E+01	8.52E+00	1.46E+01	0.00E+00	1.46E+01	1.62E+00	1.59E-01	0.00E+00	1.10E+00	0.00E+00
WDP	m^3	2.10E+01	6.23E+00	2.05E+01	0.00E+00	8.84E-01	4.42E+00	9.92E-02	0.00E+00	1.14E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[1 5]	kg CO_2 eq.	4.81E+00	6.83E-01	1.64E+00	-6.60E-01	7.83E-01	5.68E-02	1.13E-02	0.00E+00	1.08E-01	0.00E+00

Environmental Information for Hardie™ Flex Sheet, 4.5 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.37E+01	1.29E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	1.68E-03	0.00E+00	1.76E-02	0.00E+00
PERM	MJ	6.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.00E+01	1.29E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	1.68E-03	0.00E+00	1.76E-02	0.00E+00
PENRE	MJ	1.76E+01	9.00E+00	1.51E+01	0.00E+00	1.56E+01	1.62E+00	1.68E-01	0.00E+00	1.16E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.76E+01	9.00E+00	1.51E+01	0.00E+00	1.56E+01	1.62E+00	1.68E-01	0.00E+00	1.16E+00	0.00E+00
SM	kg	2.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.08E-02	8.06E-04	5.91E-03	0.00E+00	8.58E-03	3.45E-05	2.43E-05	0.00E+00	1.94E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.43E-05	6.96E-06	1.90E-05	0.00E+00	1.34E-05	5.70E-09	2.00E-07	0.00E+00	1.66E-06	0.00E+00
Non-hazardous waste disposed	kg	4.11E-01	4.61E-02	1.43E+00	0.00E+00	4.32E-01	1.07E-04	1.61E-03	0.00E+00	5.41E+00	0.00E+00
Radioactive waste disposed	kg	1.20E-05	3.27E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	9.18E-10	0.00E+00	6.65E-09	0.00E+00

[15] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Flex Sheet, 4.5 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	4.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	3.50E-07	3.65E-08	9.14E-08	0.00E+00	4.80E-08	1.37E-09	9.17E-10	0.00E+00	5.43E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	1.43E-02	2.39E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	6.65E-06	0.00E+00	4.73E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	5.45E+01	4.73E+00	2.68E+01	0.00E+00	2.09E+01	1.87E-02	9.01E-02	0.00E+00	1.10E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	1.90E-09	1.70E-10	7.15E-09	0.00E+00	1.78E-09	1.43E-12	3.31E-12	0.00E+00	3.27E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	4.97E-08	6.16E-09	3.87E-08	0.00E+00	2.06E-08	5.60E-11	1.33E-10	0.00E+00	1.18E-09	0.00E+00
Soil quality*	dimensionless	9.77E+01	1.92E+00	5.57E+00	0.00E+00	5.84E+00	1.14E-02	3.74E-02	0.00E+00	4.89E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Hardie™ Flex Sheet, 6 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	6.89E+00	9.64E-01	1.69E+00	-8.80E-01	8.14E-01	5.91E-02	1.53E-02	0.00E+00	1.47E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-5.57E-01	5.48E-04	7.40E-01	0.00E+00	2.26E-02	2.04E-03	2.21E-06	0.00E+00	1.05E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.11E-03	4.04E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	1.15E-07	0.00E+00	1.05E-06	0.00E+00
GWP-total	kg CO_2 eq.	6.34E+00	9.65E-01	2.43E+00	-8.80E-01	8.38E-01	6.12E-02	1.53E-02	0.00E+00	1.19E+00	0.00E+00
ODP	kg CFC 11 eq.	9.96E-08	1.30E-07	5.22E-08	0.00E+00	8.31E-08	4.08E-11	2.46E-09	0.00E+00	1.48E-08	0.00E+00
AP	mol H^+ eq.	4.23E-02	1.70E-02	1.36E-02	0.00E+00	1.15E-02	1.50E-04	9.45E-05	0.00E+00	1.15E-03	0.00E+00
EP-freshwater	kg P eq.	2.14E-04	1.93E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	4.91E-07	0.00E+00	4.85E-06	0.00E+00
EP-marine	kg N eq.	1.02E-02	3.35E-03	1.82E-03	0.00E+00	8.63E-04	1.59E-05	2.06E-05	0.00E+00	3.40E-04	0.00E+00
EP-terrestrial	mol N eq.	1.12E-01	3.74E-02	1.91E-02	0.00E+00	8.17E-03	1.75E-04	2.29E-04	0.00E+00	3.72E-03	0.00E+00
POCP	kg NMVOC eq.	2.85E-02	1.04E-02	5.71E-03	0.00E+00	2.83E-03	8.58E-05	7.94E-05	0.00E+00	1.10E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	4.04E-06	1.37E-06	1.90E-05	0.00E+00	1.38E-05	2.36E-09	4.79E-08	0.00E+00	5.90E-07	0.00E+00
ADP-fossil*	MJ	2.42E+01	1.19E+01	1.48E+01	0.00E+00	1.46E+01	1.62E+00	2.12E-01	0.00E+00	1.46E+00	0.00E+00
WDP	m^3	2.92E+01	8.68E+00	2.06E+01	0.00E+00	8.84E-01	4.42E+00	1.32E-01	0.00E+00	1.52E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[16]	kg CO_2 eq.	6.79E+00	9.52E-01	1.65E+00	-8.80E-01	7.83E-01	5.68E-02	1.50E-02	0.00E+00	1.44E-01	0.00E+00

Environmental Information for Hardie™ Flex Sheet, 6 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.90E+01	1.80E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PERM	MJ	8.93E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.79E+01	1.80E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PENRE	MJ	2.48E+01	1.25E+01	1.53E+01	0.00E+00	1.56E+01	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.48E+01	1.25E+01	1.53E+01	0.00E+00	1.56E+01	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
SM	kg	3.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.52E-02	1.12E-03	5.93E-03	0.00E+00	8.58E-03	3.45E-05	3.24E-05	0.00E+00	2.58E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.01E-05	9.69E-06	1.92E-05	0.00E+00	1.34E-05	5.70E-09	2.66E-07	0.00E+00	2.22E-06	0.00E+00
Non-hazardous waste disposed	kg	5.80E-01	6.42E-02	1.96E+00	0.00E+00	4.32E-01	1.07E-04	2.15E-03	0.00E+00	7.21E+00	0.00E+00
Radioactive waste disposed	kg	1.71E-05	4.55E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	1.22E-09	0.00E+00	8.87E-09	0.00E+00

[16] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Flex Sheet, 6 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	5.91E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	4.93E-07	5.08E-08	9.19E-08	0.00E+00	4.80E-08	1.37E-09	1.22E-09	0.00E+00	7.24E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	2.03E-02	3.32E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	8.87E-06	0.00E+00	6.30E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	7.69E+01	6.59E+00	2.69E+01	0.00E+00	2.09E+01	1.87E-02	1.20E-01	0.00E+00	1.46E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	2.68E-09	2.37E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	4.41E-12	0.00E+00	4.36E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	7.02E-08	8.58E-09	3.87E-08	0.00E+00	2.06E-08	5.60E-11	1.77E-10	0.00E+00	1.57E-09	0.00E+00
Soil quality*	dimensionless	1.31E+02	2.68E+00	5.61E+00	0.00E+00	5.84E+00	1.14E-02	4.99E-02	0.00E+00	6.52E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Hardie™ Flex Eaves Lining, 4.5 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	4.85E+00	6.83E-01	1.67E+00	-6.60E-01	8.14E-01	5.91E-02	1.15E-02	0.00E+00	1.10E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-3.89E-01	3.88E-04	5.80E-01	0.00E+00	2.26E-02	2.04E-03	1.65E-06	0.00E+00	7.85E-01	0.00E+00
GWP-luluc	kg CO_2 eq.	7.78E-04	2.86E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	8.61E-08	0.00E+00	7.89E-07	0.00E+00
GWP-total	kg CO_2 eq.	4.46E+00	6.83E-01	2.25E+00	-6.60E-01	8.38E-01	6.12E-02	1.15E-02	0.00E+00	8.95E-01	0.00E+00
ODP	kg CFC 11 eq.	6.96E-08	9.22E-08	5.10E-08	0.00E+00	8.31E-08	4.08E-11	1.84E-09	0.00E+00	1.11E-08	0.00E+00
AP	mol H^+ eq.	2.98E-02	1.21E-02	1.35E-02	0.00E+00	1.15E-02	1.50E-04	7.09E-05	0.00E+00	8.66E-04	0.00E+00
EP-freshwater	kg P eq.	1.50E-04	1.37E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	3.69E-07	0.00E+00	3.64E-06	0.00E+00
EP-marine	kg N eq.	7.14E-03	2.37E-03	1.79E-03	0.00E+00	8.63E-04	1.59E-05	1.54E-05	0.00E+00	2.55E-04	0.00E+00
EP-terrestrial	mol N eq.	7.85E-02	2.65E-02	1.87E-02	0.00E+00	8.17E-03	1.75E-04	1.72E-04	0.00E+00	2.79E-03	0.00E+00
POCP	kg NMVOC eq.	2.00E-02	7.34E-03	5.57E-03	0.00E+00	2.83E-03	8.58E-05	5.95E-05	0.00E+00	8.24E-04	0.00E+00
ADP-minerals & metals*	kg Sb eq.	2.83E-06	9.67E-07	1.90E-05	0.00E+00	1.38E-05	2.36E-09	3.59E-08	0.00E+00	4.42E-07	0.00E+00
ADP-fossil*	MJ	1.70E+01	8.41E+00	1.46E+01	0.00E+00	1.46E+01	1.62E+00	1.59E-01	0.00E+00	1.10E+00	0.00E+00
WDP	m^3	2.05E+01	6.14E+00	2.05E+01	0.00E+00	8.84E-01	4.42E+00	9.92E-02	0.00E+00	1.14E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[17]	kg CO_2 eq.	4.77E+00	6.74E-01	1.64E+00	-6.60E-01	7.83E-01	5.68E-02	1.13E-02	0.00E+00	1.08E-01	0.00E+00

Environmental Information for Hardie™ Flex Eaves Lining, 4.5 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.32E+01	1.27E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	1.68E-03	0.00E+00	1.76E-02	0.00E+00
PERM	MJ	6.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.95E+01	1.27E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	1.68E-03	0.00E+00	1.76E-02	0.00E+00
PENRE	MJ	1.75E+01	8.87E+00	1.51E+01	0.00E+00	1.56E+01	1.62E+00	1.68E-01	0.00E+00	1.16E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.75E+01	8.87E+00	1.51E+01	0.00E+00	1.56E+01	1.62E+00	1.68E-01	0.00E+00	1.16E+00	0.00E+00
SM	kg	2.48E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.06E-02	7.95E-04	5.91E-03	0.00E+00	8.58E-03	3.45E-05	2.43E-05	0.00E+00	1.94E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.41E-05	6.86E-06	1.90E-05	0.00E+00	1.34E-05	5.70E-09	2.00E-07	0.00E+00	1.66E-06	0.00E+00
Non-hazardous waste disposed	kg	4.07E-01	4.55E-02	1.36E+00	0.00E+00	4.32E-01	1.07E-04	1.61E-03	0.00E+00	5.41E+00	0.00E+00
Radioactive waste disposed	kg	1.19E-05	3.22E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	9.18E-10	0.00E+00	6.65E-09	0.00E+00

[17] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Flex Eaves Lining, 4.5 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	3.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	3.48E-07	3.59E-08	9.13E-08	0.00E+00	4.80E-08	1.37E-09	9.17E-10	0.00E+00	5.43E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	1.42E-02	2.35E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	6.65E-06	0.00E+00	4.73E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	5.41E+01	4.67E+00	2.67E+01	0.00E+00	2.09E+01	1.87E-02	9.01E-02	0.00E+00	1.10E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	1.88E-09	1.68E-10	7.15E-09	0.00E+00	1.78E-09	1.43E-12	3.31E-12	0.00E+00	3.27E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	4.93E-08	6.07E-09	3.84E-08	0.00E+00	2.06E-08	5.60E-11	1.33E-10	0.00E+00	1.18E-09	0.00E+00
Soil quality*	dimensionless	9.14E+01	1.90E+00	5.56E+00	0.00E+00	5.84E+00	1.14E-02	3.74E-02	0.00E+00	4.89E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for EasyLap™ Panel, 9 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	9.95E+00	7.48E-01	1.69E+00	-1.10E+00	8.14E-01	5.91E-02	2.35E-02	0.00E+00	2.26E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-8.22E-01	4.33E-04	2.09E-01	0.00E+00	2.26E-02	2.04E-03	3.38E-06	0.00E+00	1.36E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.50E-03	3.07E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	1.76E-07	0.00E+00	1.61E-06	0.00E+00
GWP-total	kg CO_2 eq.	9.13E+00	7.49E-01	1.90E+00	-1.10E+00	8.38E-01	6.12E-02	2.35E-02	0.00E+00	1.59E+00	0.00E+00
ODP	kg CFC 11 eq.	1.52E-07	1.01E-07	5.29E-08	0.00E+00	8.31E-08	4.08E-11	3.77E-09	0.00E+00	2.27E-08	0.00E+00
AP	mol H^+ eq.	6.20E-02	1.34E-02	1.37E-02	0.00E+00	1.15E-02	1.50E-04	1.45E-04	0.00E+00	1.77E-03	0.00E+00
EP-freshwater	kg P eq.	3.52E-04	1.48E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	7.53E-07	0.00E+00	7.43E-06	0.00E+00
EP-marine	kg N eq.	1.44E-02	2.64E-03	1.84E-03	0.00E+00	8.63E-04	1.59E-05	3.16E-05	0.00E+00	5.21E-04	0.00E+00
EP-terrestrial	mol N eq.	1.57E-01	2.94E-02	1.92E-02	0.00E+00	8.17E-03	1.75E-04	3.52E-04	0.00E+00	5.70E-03	0.00E+00
POCP	kg NMVOC eq.	4.08E-02	8.15E-03	5.62E-03	0.00E+00	2.83E-03	8.58E-05	1.22E-04	0.00E+00	1.68E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	6.40E-06	1.03E-06	1.90E-05	0.00E+00	1.38E-05	2.36E-09	7.35E-08	0.00E+00	9.04E-07	0.00E+00
ADP-fossil*	MJ	4.09E+01	9.19E+00	1.48E+01	0.00E+00	1.46E+01	1.62E+00	3.24E-01	0.00E+00	2.25E+00	0.00E+00
WDP	m^3	4.82E+01	6.74E+00	2.07E+01	0.00E+00	8.84E-01	4.42E+00	2.03E-01	0.00E+00	2.32E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[18]	kg CO_2 eq.	9.80E+00	7.39E-01	1.66E+00	-1.10E+00	7.83E-01	5.68E-02	2.31E-02	0.00E+00	2.21E-01	0.00E+00

Environmental Information for EasyLap™ Panel, 9 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	2.44E+01	1.40E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	3.42E-03	0.00E+00	3.60E-02	0.00E+00
PERM	MJ	1.18E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.62E+01	1.40E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	3.42E-03	0.00E+00	3.60E-02	0.00E+00
PENRE	MJ	4.22E+01	9.70E+00	1.53E+01	0.00E+00	1.56E+01	1.62E+00	3.43E-01	0.00E+00	2.36E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.22E+01	9.70E+00	1.53E+01	0.00E+00	1.56E+01	1.62E+00	3.43E-01	0.00E+00	2.36E+00	0.00E+00
SM	kg	5.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	2.28E-02	8.54E-04	5.94E-03	0.00E+00	8.58E-03	3.45E-05	4.97E-05	0.00E+00	3.96E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.06E-05	7.39E-06	1.93E-05	0.00E+00	1.34E-05	5.70E-09	4.08E-07	0.00E+00	3.40E-06	0.00E+00
Non-hazardous waste disposed	kg	8.74E-01	4.85E-02	2.35E+00	0.00E+00	4.32E-01	1.07E-04	3.30E-03	0.00E+00	1.11E+01	0.00E+00
Radioactive waste disposed	kg	2.54E-05	3.47E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	1.88E-09	0.00E+00	1.36E-08	0.00E+00

[18] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for EasyLap™ Panel, 9 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	1.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	7.36E-07	3.89E-08	9.22E-08	0.00E+00	4.80E-08	1.37E-09	1.88E-09	0.00E+00	1.11E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	3.97E-02	2.54E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	1.36E-05	0.00E+00	9.66E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.13E+02	5.10E+00	2.69E+01	0.00E+00	2.09E+01	1.87E-02	1.84E-01	0.00E+00	2.25E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	4.09E-09	1.84E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	6.76E-12	0.00E+00	6.69E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.04E-07	6.61E-09	3.81E-08	0.00E+00	2.06E-08	5.60E-11	2.72E-10	0.00E+00	2.41E-09	0.00E+00
Soil quality*	dimensionless	1.56E+02	2.07E+00	5.65E+00	0.00E+00	5.84E+00	1.14E-02	7.66E-02	0.00E+00	9.99E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Hardie™ Plank Weatherboard, 7.5 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	7.95E+00	1.08E+00	1.67E+00	-1.11E+00	8.14E-01	5.91E-02	1.91E-02	0.00E+00	1.84E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-7.32E-01	6.15E-04	2.11E-01	0.00E+00	2.26E-02	2.04E-03	2.76E-06	0.00E+00	1.31E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.31E-03	4.54E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	1.44E-07	0.00E+00	1.31E-06	0.00E+00
GWP-total	kg CO_2 eq.	7.21E+00	1.08E+00	1.88E+00	-1.11E+00	8.38E-01	6.12E-02	1.91E-02	0.00E+00	1.49E+00	0.00E+00
ODP	kg CFC 11 eq.	1.16E-07	1.46E-07	5.10E-08	0.00E+00	8.31E-08	4.08E-11	3.07E-09	0.00E+00	1.85E-08	0.00E+00
AP	mol H^+ eq.	4.84E-02	1.91E-02	1.35E-02	0.00E+00	1.15E-02	1.50E-04	1.18E-04	0.00E+00	1.44E-03	0.00E+00
EP-freshwater	kg P eq.	2.50E-04	2.17E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	6.14E-07	0.00E+00	6.06E-06	0.00E+00
EP-marine	kg N eq.	1.16E-02	3.76E-03	1.79E-03	0.00E+00	8.63E-04	1.59E-05	2.57E-05	0.00E+00	4.25E-04	0.00E+00
EP-terrestrial	mol N eq.	1.27E-01	4.20E-02	1.88E-02	0.00E+00	8.17E-03	1.75E-04	2.87E-04	0.00E+00	4.65E-03	0.00E+00
POCP	kg NMVOC eq.	3.25E-02	1.16E-02	5.48E-03	0.00E+00	2.83E-03	8.58E-05	9.92E-05	0.00E+00	1.37E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	4.69E-06	1.53E-06	1.90E-05	0.00E+00	1.38E-05	2.36E-09	5.99E-08	0.00E+00	7.37E-07	0.00E+00
ADP-fossil*	MJ	2.80E+01	1.33E+01	1.46E+01	0.00E+00	1.46E+01	1.62E+00	2.65E-01	0.00E+00	1.83E+00	0.00E+00
WDP	m^3	3.30E+01	9.75E+00	2.05E+01	0.00E+00	8.84E-01	4.42E+00	1.65E-01	0.00E+00	1.89E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[19]	kg CO_2 eq.	7.84E+00	1.07E+00	1.64E+00	-1.11E+00	7.83E-01	5.68E-02	1.88E-02	0.00E+00	1.80E-01	0.00E+00

Environmental Information for Hardie™ Plank Weatherboards, 7.5 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	2.14E+01	2.02E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	2.79E-03	0.00E+00	2.93E-02	0.00E+00
PERM	MJ	1.05E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.19E+01	2.02E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	2.79E-03	0.00E+00	2.93E-02	0.00E+00
PENRE	MJ	2.87E+01	1.41E+01	1.51E+01	0.00E+00	1.56E+01	1.62E+00	2.79E-01	0.00E+00	1.93E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.87E+01	1.41E+01	1.51E+01	0.00E+00	1.56E+01	1.62E+00	2.79E-01	0.00E+00	1.93E+00	0.00E+00
SM	kg	4.16E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.77E-02	1.26E-03	5.91E-03	0.00E+00	8.58E-03	3.45E-05	4.05E-05	0.00E+00	3.23E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.34E-05	1.09E-05	1.90E-05	0.00E+00	1.34E-05	5.70E-09	3.33E-07	0.00E+00	2.77E-06	0.00E+00
Non-hazardous waste disposed	kg	6.74E-01	7.21E-02	1.42E+00	0.00E+00	4.32E-01	1.07E-04	2.69E-03	0.00E+00	9.02E+00	0.00E+00
Radioactive waste disposed	kg	2.01E-05	5.11E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	1.53E-09	0.00E+00	1.11E-08	0.00E+00

[19] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Plank Weatherboards, 7.5 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	8.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	5.69E-07	5.70E-08	9.13E-08	0.00E+00	4.80E-08	1.37E-09	1.53E-09	0.00E+00	9.06E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	2.39E-02	3.73E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	1.11E-05	0.00E+00	7.88E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	8.91E+01	7.40E+00	2.67E+01	0.00E+00	2.09E+01	1.87E-02	1.50E-01	0.00E+00	1.83E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	3.13E-09	2.67E-10	7.15E-09	0.00E+00	1.78E-09	1.43E-12	5.51E-12	0.00E+00	5.46E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	8.16E-08	9.63E-09	3.79E-08	0.00E+00	2.06E-08	5.60E-11	2.22E-10	0.00E+00	1.97E-09	0.00E+00
Soil quality*	dimensionless	1.36E+02	3.01E+00	5.56E+00	0.00E+00	5.84E+00	1.14E-02	6.24E-02	0.00E+00	8.15E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for ExoTec™ Façade Panel, 9 mm thick

Potential environmental impact – mandatory indicators according to EN 15804 +A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.23E+01	9.54E-01	1.75E+00	-1.28E+00	8.14E-01	5.91E-02	2.91E-02	0.00E+00	2.80E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-1.13E+00	5.52E-04	1.16E+00	0.00E+00	2.26E-02	2.04E-03	4.20E-06	0.00E+00	2.06E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	2.23E-03	3.92E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	2.19E-07	0.00E+00	2.00E-06	0.00E+00
GWP-total	kg CO_2 eq.	1.11E+01	9.55E-01	2.91E+00	-1.28E+00	8.38E-01	6.12E-02	2.92E-02	0.00E+00	2.34E+00	0.00E+00
ODP	kg CFC 11 eq.	1.98E-07	1.28E-07	5.57E-08	0.00E+00	8.31E-08	4.08E-11	4.68E-09	0.00E+00	2.82E-08	0.00E+00
AP	mol H^+ eq.	7.90E-02	1.71E-02	1.40E-02	0.00E+00	1.15E-02	1.50E-04	1.80E-04	0.00E+00	2.20E-03	0.00E+00
EP-freshwater	kg P eq.	4.45E-04	1.88E-05	1.82E-04	0.00E+00	3.24E-04	1.93E-08	9.36E-07	0.00E+00	9.23E-06	0.00E+00
EP-marine	kg N eq.	1.84E-02	3.37E-03	1.92E-03	0.00E+00	8.63E-04	1.59E-05	3.92E-05	0.00E+00	6.47E-04	0.00E+00
EP-terrestrial	mol N eq.	2.02E-01	3.75E-02	2.01E-02	0.00E+00	8.17E-03	1.75E-04	4.37E-04	0.00E+00	7.08E-03	0.00E+00
POCP	kg NMVOC eq.	5.20E-02	1.04E-02	6.15E-03	0.00E+00	2.83E-03	8.58E-05	1.51E-04	0.00E+00	2.09E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	8.12E-06	1.31E-06	1.92E-05	0.00E+00	1.38E-05	2.36E-09	9.13E-08	0.00E+00	1.12E-06	0.00E+00
ADP-fossil*	MJ	4.80E+01	1.17E+01	1.56E+01	0.00E+00	1.46E+01	1.62E+00	4.03E-01	0.00E+00	2.79E+00	0.00E+00
WDP	m^3	5.71E+01	8.60E+00	2.16E+01	0.00E+00	8.84E-01	4.42E+00	2.52E-01	0.00E+00	2.89E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[20]	kg CO_2 eq.	1.21E+01	9.42E-01	1.71E+00	-1.28E+00	7.83E-01	5.68E-02	2.86E-02	0.00E+00	2.75E-01	0.00E+00

Environmental Information for ExoTec™ Façade Panel, 9 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	3.76E+01	1.79E-01	2.41E+00	0.00E+00	1.10E+00	5.65E-01	4.25E-03	0.00E+00	4.47E-02	0.00E+00
PERM	MJ	1.79E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.54E+01	1.79E-01	2.41E+00	0.00E+00	1.10E+00	5.65E-01	4.25E-03	0.00E+00	4.47E-02	0.00E+00
PENRE	MJ	4.95E+01	1.24E+01	1.62E+01	0.00E+00	1.56E+01	1.62E+00	4.26E-01	0.00E+00	2.94E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.95E+01	1.24E+01	1.62E+01	0.00E+00	1.56E+01	1.62E+00	4.26E-01	0.00E+00	2.94E+00	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	3.18E-02	1.09E-03	6.04E-03	0.00E+00	8.58E-03	3.45E-05	6.17E-05	0.00E+00	4.92E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.92E-05	9.42E-06	1.98E-05	0.00E+00	1.34E-05	5.70E-09	5.07E-07	0.00E+00	4.22E-06	0.00E+00
Non-hazardous waste disposed	kg	1.15E+00	6.18E-02	3.09E+00	0.00E+00	4.32E-01	1.07E-04	4.09E-03	0.00E+00	1.37E+01	0.00E+00
Radioactive waste disposed	kg	3.55E-05	4.43E-08	2.59E-05	0.00E+00	4.85E-05	6.87E-10	2.33E-09	0.00E+00	1.69E-08	0.00E+00

[20] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for ExoTec™ Façade Panel, 9 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	1.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	9.40E-07	4.96E-08	9.47E-08	0.00E+00	4.80E-08	1.37E-09	2.33E-09	0.00E+00	1.38E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	4.80E-02	3.23E-04	8.95E-02	0.00E+00	1.15E-01	4.75E-06	1.69E-05	0.00E+00	1.20E-04	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.42E+02	6.50E+00	2.73E+01	0.00E+00	2.09E+01	1.87E-02	2.29E-01	0.00E+00	2.79E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	5.31E-09	2.34E-10	7.17E-09	0.00E+00	1.78E-09	1.43E-12	8.40E-12	0.00E+00	8.31E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.33E-07	8.42E-09	3.97E-08	0.00E+00	2.06E-08	5.60E-11	3.38E-10	0.00E+00	3.00E-09	0.00E+00
Soil quality*	dimensionless	2.57E+02	2.64E+00	2.24E+02	0.00E+00	5.84E+00	1.14E-02	9.51E-02	0.00E+00	1.24E+00	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Axon™ Panel, 9 mm thick

Potential environmental impact – mandatory indicators according to EN 15804 +A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	9.79E+00	6.90E-01	1.69E+00	-1.08E+00	8.14E-01	5.91E-02	2.16E-02	0.00E+00	2.08E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-8.68E-01	3.99E-04	2.09E-01	0.00E+00	2.26E-02	2.04E-03	3.12E-06	0.00E+00	1.47E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.60E-03	2.83E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	1.62E-07	0.00E+00	1.49E-06	0.00E+00
GWP-total	kg CO_2 eq.	8.93E+00	6.90E-01	1.90E+00	-1.08E+00	8.38E-01	6.12E-02	2.16E-02	0.00E+00	1.68E+00	0.00E+00
ODP	kg CFC 11 eq.	1.48E-07	9.27E-08	5.26E-08	0.00E+00	8.31E-08	4.08E-11	3.48E-09	0.00E+00	2.09E-08	0.00E+00
AP	mol H^+ eq.	6.20E-02	1.24E-02	1.37E-02	0.00E+00	1.15E-02	1.50E-04	1.34E-04	0.00E+00	1.63E-03	0.00E+00
EP-freshwater	kg P eq.	3.25E-04	1.36E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	6.95E-07	0.00E+00	6.85E-06	0.00E+00
EP-marine	kg N eq.	1.47E-02	2.43E-03	1.83E-03	0.00E+00	8.63E-04	1.59E-05	2.91E-05	0.00E+00	4.80E-04	0.00E+00
EP-terrestrial	mol N eq.	1.61E-01	2.71E-02	1.92E-02	0.00E+00	8.17E-03	1.75E-04	3.24E-04	0.00E+00	5.25E-03	0.00E+00
POCP	kg NMVOC eq.	4.15E-02	7.51E-03	5.60E-03	0.00E+00	2.83E-03	8.58E-05	1.12E-04	0.00E+00	1.55E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	6.32E-06	9.48E-07	1.90E-05	0.00E+00	1.38E-05	2.36E-09	6.77E-08	0.00E+00	8.34E-07	0.00E+00
ADP-fossil*	MJ	4.03E+01	8.47E+00	1.48E+01	0.00E+00	1.46E+01	1.62E+00	2.99E-01	0.00E+00	2.07E+00	0.00E+00
WDP	m^3	4.66E+01	6.22E+00	2.06E+01	0.00E+00	8.84E-01	4.42E+00	1.87E-01	0.00E+00	2.14E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[21]	kg CO_2 eq.	9.64E+00	6.81E-01	1.66E+00	-1.08E+00	7.83E-01	5.68E-02	2.13E-02	0.00E+00	2.04E-01	0.00E+00

Environmental Information for Axon™ Panel, 9 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	2.56E+01	1.29E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	3.16E-03	0.00E+00	3.32E-02	0.00E+00
PERM	MJ	1.25E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.81E+01	1.29E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	3.16E-03	0.00E+00	3.32E-02	0.00E+00
PENRE	MJ	4.17E+01	8.94E+00	1.53E+01	0.00E+00	1.56E+01	1.62E+00	3.16E-01	0.00E+00	2.18E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.17E+01	8.94E+00	1.53E+01	0.00E+00	1.56E+01	1.62E+00	3.16E-01	0.00E+00	2.18E+00	0.00E+00
SM	kg	2.65E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	2.16E-02	7.87E-04	5.94E-03	0.00E+00	8.58E-03	3.45E-05	4.58E-05	0.00E+00	3.65E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.01E-05	6.81E-06	1.93E-05	0.00E+00	1.34E-05	5.70E-09	3.76E-07	0.00E+00	3.13E-06	0.00E+00
Non-hazardous waste disposed	kg	8.24E-01	4.47E-02	2.22E+00	0.00E+00	4.32E-01	1.07E-04	3.04E-03	0.00E+00	1.02E+01	0.00E+00
Radioactive waste disposed	kg	2.61E-05	3.20E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	1.73E-09	0.00E+00	1.25E-08	0.00E+00

[21] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Axon™ Panel, 9 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	8.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	7.15E-07	3.59E-08	9.21E-08	0.00E+00	4.80E-08	1.37E-09	1.73E-09	0.00E+00	1.02E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	3.90E-02	2.34E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	1.25E-05	0.00E+00	8.91E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.13E+02	4.70E+00	2.69E+01	0.00E+00	2.09E+01	1.87E-02	1.70E-01	0.00E+00	2.07E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	3.79E-09	1.69E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	6.23E-12	0.00E+00	6.17E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	9.94E-08	6.09E-09	3.81E-08	0.00E+00	2.06E-08	5.60E-11	2.51E-10	0.00E+00	2.22E-09	0.00E+00
Soil quality*	dimensionless	1.63E+02	1.91E+00	5.63E+00	0.00E+00	5.84E+00	1.14E-02	7.06E-02	0.00E+00	9.21E-01	0.00E+00

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**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Stria™ Cladding, 14 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.63E+01	2.01E+00	1.71E+00	-2.05E+00	8.14E-01	5.91E-02	3.26E-02	0.00E+00	3.14E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-1.24E+00	1.14E-03	3.44E-01	0.00E+00	2.26E-02	2.04E-03	4.71E-06	0.00E+00	2.12E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	2.36E-03	8.40E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	2.45E-07	0.00E+00	2.24E-06	0.00E+00
GWP-total	kg CO_2 eq.	1.51E+01	2.01E+00	2.05E+00	-2.05E+00	8.38E-01	6.12E-02	3.26E-02	0.00E+00	2.43E+00	0.00E+00
ODP	kg CFC 11 eq.	2.33E-07	2.71E-07	5.44E-08	0.00E+00	8.31E-08	4.08E-11	5.24E-09	0.00E+00	3.16E-08	0.00E+00
AP	mol H^+ eq.	1.01E-01	3.54E-02	1.38E-02	0.00E+00	1.15E-02	1.50E-04	2.02E-04	0.00E+00	2.46E-03	0.00E+00
EP-freshwater	kg P eq.	4.94E-04	4.02E-05	1.79E-04	0.00E+00	3.24E-04	1.93E-08	1.05E-06	0.00E+00	1.03E-05	0.00E+00
EP-marine	kg N eq.	2.47E-02	6.97E-03	1.87E-03	0.00E+00	8.63E-04	1.59E-05	4.39E-05	0.00E+00	7.25E-04	0.00E+00
EP-terrestrial	mol N eq.	2.71E-01	7.78E-02	1.96E-02	0.00E+00	8.17E-03	1.75E-04	4.89E-04	0.00E+00	7.93E-03	0.00E+00
POCP	kg NMVOC eq.	6.95E-02	2.16E-02	5.77E-03	0.00E+00	2.83E-03	8.58E-05	1.69E-04	0.00E+00	2.34E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	9.63E-06	2.84E-06	1.91E-05	0.00E+00	1.38E-05	2.36E-09	1.02E-07	0.00E+00	1.26E-06	0.00E+00
ADP-fossil*	MJ	6.34E+01	2.47E+01	1.50E+01	0.00E+00	1.46E+01	1.62E+00	4.51E-01	0.00E+00	3.12E+00	0.00E+00
WDP	m^3	7.38E+01	1.81E+01	2.08E+01	0.00E+00	8.84E-01	4.42E+00	2.82E-01	0.00E+00	3.23E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[22]	kg CO_2 eq.	1.61E+01	1.98E+00	1.67E+00	-2.05E+00	7.83E-01	5.68E-02	3.21E-02	0.00E+00	3.07E-01	0.00E+00

Environmental Information for Stria™ Cladding, 14 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	3.75E+01	3.74E-01	2.41E+00	0.00E+00	1.10E+00	5.65E-01	4.76E-03	0.00E+00	5.00E-02	0.00E+00
PERM	MJ	1.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.55E+01	3.74E-01	2.41E+00	0.00E+00	1.10E+00	5.65E-01	4.76E-03	0.00E+00	5.00E-02	0.00E+00
PENRE	MJ	6.53E+01	2.61E+01	1.55E+01	0.00E+00	1.56E+01	1.62E+00	4.77E-01	0.00E+00	3.29E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	6.53E+01	2.61E+01	1.55E+01	0.00E+00	1.56E+01	1.62E+00	4.77E-01	0.00E+00	3.29E+00	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	3.14E-02	2.34E-03	5.97E-03	0.00E+00	8.58E-03	3.45E-05	6.91E-05	0.00E+00	5.51E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4.73E-05	2.02E-05	1.95E-05	0.00E+00	1.34E-05	5.70E-09	5.68E-07	0.00E+00	4.73E-06	0.00E+00
Non-hazardous waste disposed	kg	1.28E+00	1.34E-01	3.05E+00	0.00E+00	4.32E-01	1.07E-04	4.59E-03	0.00E+00	1.54E+01	0.00E+00
Radioactive waste disposed	kg	3.90E-05	9.47E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	2.61E-09	0.00E+00	1.89E-08	0.00E+00

[22] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Stria™ Cladding, 14 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	1.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	1.12E-06	1.06E-07	9.29E-08	0.00E+00	4.80E-08	1.37E-09	2.61E-09	0.00E+00	1.55E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	5.51E-02	6.92E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	1.89E-05	0.00E+00	1.34E-04	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.83E+02	1.37E+01	2.71E+01	0.00E+00	2.09E+01	1.87E-02	2.56E-01	0.00E+00	3.12E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	5.93E-09	4.94E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	9.40E-12	0.00E+00	9.31E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.60E-07	1.78E-08	3.85E-08	0.00E+00	2.06E-08	5.60E-11	3.78E-10	0.00E+00	3.36E-09	0.00E+00
Soil quality*	dimensionless	2.42E+02	5.57E+00	5.71E+00	0.00E+00	5.84E+00	1.14E-02	1.06E-01	0.00E+00	1.39E+00	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Linea™ Weatherboards, 16 mm thick

Potential environmental impact – mandatory indicators according to EN 15804 +2A

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.71E+01	2.11E+00	1.69E+00	-2.34E+00	8.14E-01	5.91E-02	3.73E-02	0.00E+00	3.59E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-1.32E+00	1.20E-03	2.17E-01	0.00E+00	2.26E-02	2.04E-03	5.38E-06	0.00E+00	2.42E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	2.49E-03	8.84E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	2.80E-07	0.00E+00	2.56E-06	0.00E+00
GWP-total	kg CO_2 eq.	1.58E+01	2.11E+00	1.90E+00	-2.34E+00	8.38E-01	6.12E-02	3.73E-02	0.00E+00	2.78E+00	0.00E+00
ODP	kg CFC 11 eq.	2.43E-07	2.85E-07	5.24E-08	0.00E+00	8.31E-08	4.08E-11	5.99E-09	0.00E+00	3.61E-08	0.00E+00
AP	mol H^+ eq.	1.06E-01	3.73E-02	1.36E-02	0.00E+00	1.15E-02	1.50E-04	2.30E-04	0.00E+00	2.82E-03	0.00E+00
EP-freshwater	kg P eq.	5.13E-04	4.23E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	1.20E-06	0.00E+00	1.18E-05	0.00E+00
EP-marine	kg N eq.	2.59E-02	7.34E-03	1.83E-03	0.00E+00	8.63E-04	1.59E-05	5.02E-05	0.00E+00	8.28E-04	0.00E+00
EP-terrestrial	mol N eq.	2.84E-01	8.19E-02	1.91E-02	0.00E+00	8.17E-03	1.75E-04	5.59E-04	0.00E+00	9.06E-03	0.00E+00
POCP	kg NMVOC eq.	7.28E-02	2.27E-02	5.59E-03	0.00E+00	2.83E-03	8.58E-05	1.93E-04	0.00E+00	2.68E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	9.95E-06	2.99E-06	1.90E-05	0.00E+00	1.38E-05	2.36E-09	1.17E-07	0.00E+00	1.44E-06	0.00E+00
ADP-fossil*	MJ	6.53E+01	2.60E+01	1.48E+01	0.00E+00	1.46E+01	1.62E+00	5.16E-01	0.00E+00	3.57E+00	0.00E+00
WDP	m^3	7.59E+01	1.90E+01	2.06E+01	0.00E+00	8.84E-01	4.42E+00	3.23E-01	0.00E+00	3.69E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[23]	kg CO_2 eq.	1.69E+01	2.08E+00	1.65E+00	-2.34E+00	7.83E-01	5.68E-02	3.67E-02	0.00E+00	3.51E-01	0.00E+00

Environmental Information for Linea™ Weatherboards, 16 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	3.93E+01	3.93E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	5.44E-03	0.00E+00	5.72E-02	0.00E+00
PERM	MJ	1.90E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.83E+01	3.93E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	5.44E-03	0.00E+00	5.72E-02	0.00E+00
PENRE	MJ	6.72E+01	2.74E+01	1.53E+01	0.00E+00	1.56E+01	1.62E+00	5.45E-01	0.00E+00	3.76E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	6.72E+01	2.74E+01	1.53E+01	0.00E+00	1.56E+01	1.62E+00	5.45E-01	0.00E+00	3.76E+00	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	3.29E-02	2.46E-03	5.93E-03	0.00E+00	8.58E-03	3.45E-05	7.90E-05	0.00E+00	6.30E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4.94E-05	2.12E-05	1.92E-05	0.00E+00	1.34E-05	5.70E-09	6.49E-07	0.00E+00	5.40E-06	0.00E+00
Non-hazardous waste disposed	kg	1.35E+00	1.41E-01	2.10E+00	0.00E+00	4.32E-01	1.07E-04	5.24E-03	0.00E+00	1.76E+01	0.00E+00
Radioactive waste disposed	kg	4.08E-05	9.96E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	2.98E-09	0.00E+00	2.16E-08	0.00E+00

[23] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Linea™ Weatherboards, 16 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	1.18E-06	1.11E-07	9.20E-08	0.00E+00	4.80E-08	1.37E-09	2.98E-09	0.00E+00	1.77E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	5.59E-02	7.28E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	2.16E-05	0.00E+00	1.54E-04	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.93E+02	1.44E+01	2.69E+01	0.00E+00	2.09E+01	1.87E-02	2.93E-01	0.00E+00	3.57E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	6.24E-09	5.20E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	1.07E-11	0.00E+00	1.06E-10	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.69E-07	1.88E-08	3.81E-08	0.00E+00	2.06E-08	5.60E-11	4.33E-10	0.00E+00	3.83E-09	0.00E+00
Soil quality*	dimensionless	2.52E+02	5.86E+00	5.62E+00	0.00E+00	5.84E+00	1.14E-02	1.22E-01	0.00E+00	1.59E+00	0.00E+00

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Environmental Information for Linea™ Oblique™ Weatherboards, 14 mm thick

Potential environmental impact – mandatory indicators according to EN 15804 +2A

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.52E+01	9.67E-01	1.69E+00	-2.05E+00	8.14E-01	5.91E-02	3.26E-02	0.00E+00	3.14E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-1.14E+00	5.60E-04	4.24E-01	0.00E+00	2.26E-02	2.04E-03	4.71E-06	0.00E+00	2.12E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	2.17E-03	3.97E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	2.45E-07	0.00E+00	2.24E-06	0.00E+00
GWP-total	kg CO_2 eq.	1.40E+01	9.68E-01	2.11E+00	-2.05E+00	8.38E-01	6.12E-02	3.27E-02	0.00E+00	2.43E+00	0.00E+00
ODP	kg CFC 11 eq.	2.18E-07	1.30E-07	5.22E-08	0.00E+00	8.31E-08	4.08E-11	5.25E-09	0.00E+00	3.16E-08	0.00E+00
AP	mol H^+ eq.	9.37E-02	1.74E-02	1.36E-02	0.00E+00	1.15E-02	1.50E-04	2.02E-04	0.00E+00	2.46E-03	0.00E+00
EP-freshwater	kg P eq.	4.66E-04	1.91E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	1.05E-06	0.00E+00	1.03E-05	0.00E+00
EP-marine	kg N eq.	2.29E-02	3.41E-03	1.82E-03	0.00E+00	8.63E-04	1.59E-05	4.39E-05	0.00E+00	7.25E-04	0.00E+00
EP-terrestrial	mol N eq.	2.51E-01	3.81E-02	1.91E-02	0.00E+00	8.17E-03	1.75E-04	4.89E-04	0.00E+00	7.93E-03	0.00E+00
POCP	kg NMVOC eq.	6.45E-02	1.05E-02	5.63E-03	0.00E+00	2.83E-03	8.58E-05	1.69E-04	0.00E+00	2.34E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	9.11E-06	1.33E-06	1.90E-05	0.00E+00	1.38E-05	2.36E-09	1.02E-07	0.00E+00	1.26E-06	0.00E+00
ADP-fossil*	MJ	6.03E+01	1.19E+01	1.48E+01	0.00E+00	1.46E+01	1.62E+00	4.51E-01	0.00E+00	3.12E+00	0.00E+00
WDP	m^3	7.04E+01	8.72E+00	2.06E+01	0.00E+00	8.84E-01	4.42E+00	2.82E-01	0.00E+00	3.23E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[24]	kg CO_2 eq.	1.49E+01	9.55E-01	1.65E+00	-2.05E+00	7.83E-01	5.68E-02	3.21E-02	0.00E+00	3.08E-01	0.00E+00

Environmental Information for Linea™ Oblique™ Weatherboards, 14 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	3.47E+01	1.81E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	4.76E-03	0.00E+00	5.00E-02	0.00E+00
PERM	MJ	1.66E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.13E+01	1.81E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	4.76E-03	0.00E+00	5.00E-02	0.00E+00
PENRE	MJ	6.22E+01	1.25E+01	1.53E+01	0.00E+00	1.56E+01	1.62E+00	4.77E-01	0.00E+00	3.29E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	6.22E+01	1.25E+01	1.53E+01	0.00E+00	1.56E+01	1.62E+00	4.77E-01	0.00E+00	3.29E+00	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	2.91E-02	1.10E-03	5.93E-03	0.00E+00	8.58E-03	3.45E-05	6.91E-05	0.00E+00	5.51E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4.43E-05	9.55E-06	1.92E-05	0.00E+00	1.34E-05	5.70E-09	5.68E-07	0.00E+00	4.73E-06	0.00E+00
Non-hazardous waste disposed	kg	1.18E+00	6.27E-02	2.00E+00	0.00E+00	4.32E-01	1.07E-04	4.59E-03	0.00E+00	1.54E+01	0.00E+00
Radioactive waste disposed	kg	3.64E-05	4.49E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	2.61E-09	0.00E+00	1.89E-08	0.00E+00

[24] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Linea™ Oblique™ Weatherboards, 14 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	1.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	1.04E-06	5.03E-08	9.19E-08	0.00E+00	4.80E-08	1.37E-09	2.61E-09	0.00E+00	1.55E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	5.40E-02	3.28E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	1.89E-05	0.00E+00	1.34E-04	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.70E+02	6.59E+00	2.69E+01	0.00E+00	2.09E+01	1.87E-02	2.56E-01	0.00E+00	3.12E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	5.50E-09	2.37E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	9.40E-12	0.00E+00	9.31E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.48E-07	8.54E-09	3.83E-08	0.00E+00	2.06E-08	5.60E-11	3.79E-10	0.00E+00	3.36E-09	0.00E+00
Soil quality*	dimensionless	2.26E+02	2.67E+00	5.62E+00	0.00E+00	5.84E+00	1.14E-02	1.07E-01	0.00E+00	1.39E+00	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Hardie™ Panel Compressed Sheet, 18 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+2A

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	3.25E+01	2.13E+00	1.81E+00	-3.58E+00	0.00E+00	5.91E-02	6.59E-02	0.00E+00	6.33E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-2.81E+00	1.23E-03	1.46E+00	0.00E+00	0.00E+00	2.04E-03	9.49E-06	0.00E+00	4.13E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	5.40E-03	8.76E-06	2.97E-04	0.00E+00	0.00E+00	1.85E-09	4.94E-07	0.00E+00	4.52E-06	0.00E+00
GWP-total	kg CO_2 eq.	2.97E+01	2.13E+00	3.27E+00	-3.58E+00	0.00E+00	6.12E-02	6.59E-02	0.00E+00	4.76E+00	0.00E+00
ODP	kg CFC 11 eq.	5.02E-07	2.87E-07	6.13E-08	0.00E+00	0.00E+00	4.08E-11	1.06E-08	0.00E+00	6.37E-08	0.00E+00
AP	mol H^+ eq.	1.88E-01	3.83E-02	1.45E-02	0.00E+00	0.00E+00	1.50E-04	4.07E-04	0.00E+00	4.97E-03	0.00E+00
EP-freshwater	kg P eq.	1.14E-03	4.20E-05	1.84E-04	0.00E+00	0.00E+00	1.93E-08	2.11E-06	0.00E+00	2.09E-05	0.00E+00
EP-marine	kg N eq.	4.69E-02	7.52E-03	2.05E-03	0.00E+00	0.00E+00	1.59E-05	8.86E-05	0.00E+00	1.46E-03	0.00E+00
EP-terrestrial	mol N eq.	5.18E-01	8.39E-02	2.15E-02	0.00E+00	0.00E+00	1.75E-04	9.87E-04	0.00E+00	1.60E-02	0.00E+00
POCP	kg NMVOC eq.	1.32E-01	2.32E-02	6.64E-03	0.00E+00	0.00E+00	8.58E-05	3.42E-04	0.00E+00	4.73E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	1.97E-05	2.93E-06	1.94E-05	0.00E+00	0.00E+00	2.36E-09	2.06E-07	0.00E+00	2.54E-06	0.00E+00
ADP-fossil*	MJ	1.14E+02	2.62E+01	1.62E+01	0.00E+00	0.00E+00	1.62E+00	9.11E-01	0.00E+00	6.30E+00	0.00E+00
WDP	m^3	1.35E+02	1.92E+01	2.21E+01	0.00E+00	0.00E+00	4.42E+00	5.69E-01	0.00E+00	6.52E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[25]	kg CO_2 eq.	3.20E+01	2.10E+00	1.77E+00	-3.58E+00	0.00E+00	5.68E-02	6.47E-02	0.00E+00	6.20E-01	0.00E+00

Environmental Information for Hardie™ Panel Compressed Sheet, 18 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	8.85E+01	3.99E-01	2.42E+00	0.00E+00	0.00E+00	5.65E-01	9.61E-03	0.00E+00	1.01E-01	0.00E+00
PERM	MJ	4.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.31E+02	3.99E-01	2.42E+00	0.00E+00	0.00E+00	5.65E-01	9.61E-03	0.00E+00	1.01E-01	0.00E+00
PENRE	MJ	1.17E+02	2.76E+01	1.68E+01	0.00E+00	0.00E+00	1.62E+00	9.62E-01	0.00E+00	6.63E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.17E+02	2.76E+01	1.68E+01	0.00E+00	0.00E+00	1.62E+00	9.62E-01	0.00E+00	6.63E+00	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	7.27E-02	2.43E-03	6.13E-03	0.00E+00	0.00E+00	3.45E-05	1.39E-04	0.00E+00	1.11E-03	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	9.67E-05	2.11E-05	2.06E-05	0.00E+00	0.00E+00	5.70E-09	1.15E-06	0.00E+00	9.53E-06	0.00E+00
Non-hazardous waste disposed	kg	2.88E+00	1.38E-01	5.79E+00	0.00E+00	0.00E+00	1.07E-04	9.25E-03	0.00E+00	3.10E+01	0.00E+00
Radioactive waste disposed	kg	8.60E-05	9.89E-08	2.59E-05	0.00E+00	0.00E+00	6.87E-10	5.26E-09	0.00E+00	3.82E-08	0.00E+00

[25] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Panel Compressed Sheet, 18 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C2	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	7.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy re-covery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	2.17E-06	1.11E-07	9.75E-08	0.00E+00	0.00E+00	1.37E-09	5.26E-09	0.00E+00	3.12E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	1.03E-01	7.23E-04	8.95E-02	0.00E+00	0.00E+00	4.75E-06	3.82E-05	0.00E+00	2.71E-04	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	3.42E+02	1.45E+01	2.78E+01	0.00E+00	0.00E+00	1.87E-02	5.17E-01	0.00E+00	6.30E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	1.37E-08	5.23E-10	7.19E-09	0.00E+00	0.00E+00	1.43E-12	1.90E-11	0.00E+00	1.88E-10	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	3.46E-07	1.88E-08	4.07E-08	0.00E+00	0.00E+00	5.60E-11	7.64E-10	0.00E+00	6.77E-09	0.00E+00
Soil quality*	dimensionless	5.87E+02	5.89E+00	2.24E+02	0.00E+00	0.00E+00	1.14E-02	2.15E-01	0.00E+00	2.80E+00	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Secura™ Interior Flooring, 19 mm thick

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	1.84E+01	1.30E+00	1.72E+00	-2.37E+00	0.00E+00	5.91E-02	4.43E-02	0.00E+00	4.26E-01	0.00E+00
GWP-biogenic	kg CO2 eq.	-2.66E+00	7.25E-04	2.16E-01	0.00E+00	0.00E+00	2.04E-03	6.39E-06	0.00E+00	3.96E+00	0.00E+00
GWP-luluc	kg CO2 eq.	2.63E-03	5.56E-06	2.96E-04	0.00E+00	0.00E+00	1.85E-09	3.32E-07	0.00E+00	3.04E-06	0.00E+00
GWP-total	kg CO2 eq.	1.57E+01	1.30E+00	1.94E+00	-2.37E+00	0.00E+00	6.12E-02	4.43E-02	0.00E+00	4.39E+00	0.00E+00
ODP	kg CFC 11 eq.	3.22E-07	1.77E-07	5.59E-08	0.00E+00	0.00E+00	4.08E-11	7.12E-09	0.00E+00	4.29E-08	0.00E+00
AP	mol H+ eq.	9.70E-02	2.26E-02	1.39E-02	0.00E+00	0.00E+00	1.50E-04	2.74E-04	0.00E+00	3.34E-03	0.00E+00
EP-freshwater	kg P eq	6.01E-04	2.65E-05	1.79E-04	0.00E+00	0.00E+00	1.93E-08	1.42E-06	0.00E+00	1.40E-05	0.00E+00
EP-marine	kg N eq.	2.71E-02	4.45E-03	1.91E-03	0.00E+00	0.00E+00	1.59E-05	5.96E-05	0.00E+00	9.84E-04	0.00E+00
EP-terrestrial	mol N eq.	2.98E-01	4.96E-02	2.00E-02	0.00E+00	0.00E+00	1.75E-04	6.64E-04	0.00E+00	1.08E-02	0.00E+00
POCP	kg NMVOC eq.	7.57E-02	1.38E-02	5.85E-03	0.00E+00	0.00E+00	8.58E-05	2.30E-04	0.00E+00	3.18E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	1.21E-05	1.90E-06	1.92E-05	0.00E+00	0.00E+00	2.36E-09	1.39E-07	0.00E+00	1.71E-06	0.00E+00
ADP-fossil*	MJ	1.43E+02	1.61E+01	1.51E+01	0.00E+00	0.00E+00	1.62E+00	6.13E-01	0.00E+00	4.24E+00	0.00E+00
WDP	m^3	8.40E+01	1.17E+01	2.10E+01	0.00E+00	0.00E+00	4.42E+00	3.83E-01	0.00E+00	4.39E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[26]	kg CO_2 eq.	1.82E+01	1.28E+00	1.69E+00	-2.37E+00	0.00E+00	5.68E-02	4.35E-02	0.00E+00	4.17E-01	0.00E+00

Environmental Information for Secura™ Interior Flooring, 19 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	7.33E+01	2.41E-01	2.41E+00	0.00E+00	0.00E+00	5.65E-01	6.47E-03	0.00E+00	6.79E-02	0.00E+00
PERM	MJ	3.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.08E+02	2.41E-01	2.41E+00	0.00E+00	0.00E+00	5.65E-01	6.47E-03	0.00E+00	6.79E-02	0.00E+00
PENRE	MJ	1.45E+02	1.70E+01	1.56E+01	0.00E+00	0.00E+00	1.62E+00	6.47E-01	0.00E+00	4.46E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.45E+02	1.70E+01	1.56E+01	0.00E+00	0.00E+00	1.62E+00	6.47E-01	0.00E+00	4.46E+00	0.00E+00
SM	kg	5.01E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	3.58E-02	1.55E-03	6.00E-03	0.00E+00	0.00E+00	3.45E-05	9.38E-05	0.00E+00	7.48E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6.18E-05	1.33E-05	1.98E-05	0.00E+00	0.00E+00	5.70E-09	7.71E-07	0.00E+00	6.41E-06	0.00E+00
Non-hazardous waste disposed	kg	1.66E+00	8.92E-02	3.83E+00	0.00E+00	0.00E+00	1.07E-04	6.22E-03	0.00E+00	2.09E+01	0.00E+00
Radioactive waste disposed	kg	5.42E-05	6.25E-08	2.58E-05	0.00E+00	0.00E+00	6.87E-10	3.54E-09	0.00E+00	2.57E-08	0.00E+00

[26] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Secura™ Interior Flooring, 19 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	2.03E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	1.04E-06	6.95E-08	9.37E-08	0.00E+00	0.00E+00	1.37E-09	3.54E-09	0.00E+00	2.10E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	8.72E-02	4.57E-04	8.84E-02	0.00E+00	0.00E+00	4.75E-06	2.57E-05	0.00E+00	1.82E-04	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.55E+02	8.93E+00	2.72E+01	0.00E+00	0.00E+00	1.87E-02	3.48E-01	0.00E+00	4.24E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	5.78E-09	3.22E-10	7.17E-09	0.00E+00	0.00E+00	1.43E-12	1.28E-11	0.00E+00	1.26E-10	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.51E-07	1.17E-08	3.85E-08	0.00E+00	0.00E+00	5.60E-11	5.14E-10	0.00E+00	4.55E-09	0.00E+00
Soil quality*	dimensionless	4.64E+02	3.63E+00	5.78E+00	0.00E+00	0.00E+00	1.14E-02	1.45E-01	0.00E+00	1.89E+00	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Villaboard™ Lining, 6 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	6.22E+00	9.60E-01	1.74E+00	-6.30E-01	1.05E+00	5.91E-02	1.53E-02	0.00E+00	1.47E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-4.94E-01	5.46E-04	6.53E-01	0.00E+00	2.91E-02	2.04E-03	2.21E-06	0.00E+00	9.19E-01	0.00E+00
GWP-luluc	kg CO_2 eq.	9.51E-04	4.02E-06	2.96E-04	0.00E+00	9.21E-04	1.85E-09	1.15E-07	0.00E+00	1.05E-06	0.00E+00
GWP-total	kg CO_2 eq.	5.72E+00	9.61E-01	2.39E+00	-6.30E-01	1.08E+00	6.12E-02	1.53E-02	0.00E+00	1.07E+00	0.00E+00
ODP	kg CFC 11 eq.	8.62E-08	1.30E-07	5.74E-08	0.00E+00	1.07E-07	4.08E-11	2.46E-09	0.00E+00	1.48E-08	0.00E+00
AP	mol H^+ eq.	3.93E-02	1.70E-02	1.40E-02	0.00E+00	1.48E-02	1.50E-04	9.45E-05	0.00E+00	1.15E-03	0.00E+00
EP-freshwater	kg P eq.	1.58E-04	1.92E-05	1.80E-04	0.00E+00	4.16E-04	1.93E-08	4.91E-07	0.00E+00	4.85E-06	0.00E+00
EP-marine	kg N eq.	9.18E-03	3.34E-03	1.94E-03	0.00E+00	1.11E-03	1.59E-05	2.06E-05	0.00E+00	3.40E-04	0.00E+00
EP-terrestrial	mol N eq.	1.01E-01	3.72E-02	2.04E-02	0.00E+00	1.05E-02	1.75E-04	2.29E-04	0.00E+00	3.72E-03	0.00E+00
POCP	kg NMVOC eq.	2.59E-02	1.03E-02	6.07E-03	0.00E+00	3.64E-03	8.58E-05	7.94E-05	0.00E+00	1.10E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	3.61E-06	1.36E-06	1.92E-05	0.00E+00	1.77E-05	2.36E-09	4.79E-08	0.00E+00	5.90E-07	0.00E+00
ADP-fossil*	MJ	2.23E+01	1.18E+01	1.53E+01	0.00E+00	1.87E+01	1.62E+00	2.12E-01	0.00E+00	1.46E+00	0.00E+00
WDP	m^3	2.73E+01	8.64E+00	2.11E+01	0.00E+00	1.14E+00	4.42E+00	1.32E-01	0.00E+00	1.52E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[27]	kg CO_2 eq.	6.12E+00	9.47E-01	1.70E+00	-6.30E-01	1.01E+00	5.68E-02	1.50E-02	0.00E+00	1.44E-01	0.00E+00

Environmental Information for Villaboard™ Lining, 6 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.66E+01	1.79E-01	2.41E+00	0.00E+00	1.42E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PERM	MJ	7.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.43E+01	1.79E-01	2.41E+00	0.00E+00	1.42E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PENRE	MJ	2.29E+01	1.25E+01	1.58E+01	0.00E+00	2.00E+01	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.29E+01	1.25E+01	1.58E+01	0.00E+00	2.00E+01	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
SM	kg	2.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.43E-02	1.12E-03	6.02E-03	0.00E+00	1.10E-02	3.45E-05	3.24E-05	0.00E+00	2.58E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.80E-05	9.65E-06	2.00E-05	0.00E+00	1.73E-05	5.70E-09	2.66E-07	0.00E+00	2.22E-06	0.00E+00
Non-hazardous waste disposed	kg	4.60E-01	6.39E-02	4.48E+00	0.00E+00	5.55E-01	1.07E-04	2.15E-03	0.00E+00	7.21E+00	0.00E+00
Radioactive waste disposed	kg	1.38E-05	4.53E-08	2.58E-05	0.00E+00	6.24E-05	6.87E-10	1.22E-09	0.00E+00	8.87E-09	0.00E+00

[27] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Villaboard™ Lining, 6 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	4.98E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy re-covery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C2	C4	D
Particulate matter	disease incidence	4.68E-07	5.05E-08	9.44E-08	0.00E+00	6.17E-08	1.37E-09	1.22E-09	0.00E+00	7.24E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	1.74E-02	3.31E-04	8.85E-02	0.00E+00	1.48E-01	4.75E-06	8.87E-06	0.00E+00	6.30E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	6.89E+01	6.56E+00	2.74E+01	0.00E+00	2.69E+01	1.87E-02	1.20E-01	0.00E+00	1.46E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	2.05E-09	2.36E-10	7.17E-09	0.00E+00	2.29E-09	1.43E-12	4.41E-12	0.00E+00	4.36E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	5.77E-08	8.54E-09	3.92E-08	0.00E+00	2.64E-08	5.60E-11	1.77E-10	0.00E+00	1.57E-09	0.00E+00
Soil quality*	dimensionless	1.14E+02	2.66E+00	5.84E+00	0.00E+00	7.51E+00	1.14E-02	4.99E-02	0.00E+00	6.52E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
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Environmental Information for Villaboard™ Lining, 9 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C2	C4	D
GWP-fossil	kg CO_2 eq.	9.29E+00	1.43E+00	1.69E+00	-9.50E-01	1.05E+00	5.91E-02	2.30E-02	0.00E+00	2.21E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-7.53E-01	8.14E-04	7.26E-01	0.00E+00	2.91E-02	2.04E-03	3.31E-06	0.00E+00	1.38E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.42E-03	6.00E-06	2.96E-04	0.00E+00	9.21E-04	1.85E-09	1.72E-07	0.00E+00	1.58E-06	0.00E+00
GWP-total	kg CO_2 eq.	8.54E+00	1.43E+00	2.41E+00	-9.50E-01	1.08E+00	6.12E-02	2.30E-02	0.00E+00	1.60E+00	0.00E+00
ODP	kg CFC 11 eq.	1.28E-07	1.93E-07	5.22E-08	0.00E+00	1.07E-07	4.08E-11	3.69E-09	0.00E+00	2.22E-08	0.00E+00
AP	mol H^+ eq.	5.86E-02	2.53E-02	1.36E-02	0.00E+00	1.48E-02	1.50E-04	1.42E-04	0.00E+00	1.73E-03	0.00E+00
EP-freshwater	kg P eq.	2.35E-04	2.87E-05	1.78E-04	0.00E+00	4.16E-04	1.93E-08	7.37E-07	0.00E+00	7.27E-06	0.00E+00
EP-marine	kg N eq.	1.37E-02	4.98E-03	1.82E-03	0.00E+00	1.11E-03	1.59E-05	3.09E-05	0.00E+00	5.10E-04	0.00E+00
EP-terrestrial	mol N eq.	1.50E-01	5.55E-02	1.91E-02	0.00E+00	1.05E-02	1.75E-04	3.44E-04	0.00E+00	5.57E-03	0.00E+00
POCP	kg NMVOC eq.	3.86E-02	1.54E-02	5.70E-03	0.00E+00	3.64E-03	8.58E-05	1.19E-04	0.00E+00	1.65E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	5.36E-06	2.03E-06	1.90E-05	0.00E+00	1.77E-05	2.36E-09	7.19E-08	0.00E+00	8.85E-07	0.00E+00
ADP-fossil*	MJ	3.32E+01	1.76E+01	1.48E+01	0.00E+00	1.87E+01	1.62E+00	3.17E-01	0.00E+00	2.20E+00	0.00E+00
WDP	m^3	4.04E+01	1.29E+01	2.06E+01	0.00E+00	1.14E+00	4.42E+00	1.98E-01	0.00E+00	2.27E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[28]	kg CO_2 eq.	9.15E+00	1.41E+00	1.65E+00	-9.50E-01	1.01E+00	5.68E-02	2.26E-02	0.00E+00	2.16E-01	0.00E+00

Environmental Information for Villaboard™ Lining, 9 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	2.46E+01	2.67E-01	2.40E+00	0.00E+00	1.42E+00	5.65E-01	3.35E-03	0.00E+00	3.52E-02	0.00E+00
PERM	MJ	1.16E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.62E+01	2.67E-01	2.40E+00	0.00E+00	1.42E+00	5.65E-01	3.35E-03	0.00E+00	3.52E-02	0.00E+00
PENRE	MJ	3.40E+01	1.86E+01	1.53E+01	0.00E+00	2.00E+01	1.62E+00	3.35E-01	0.00E+00	2.31E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.40E+01	1.86E+01	1.53E+01	0.00E+00	2.00E+01	1.62E+00	3.35E-01	0.00E+00	2.31E+00	0.00E+00
SM	kg	4.07E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	2.13E-02	1.67E-03	5.93E-03	0.00E+00	1.10E-02	3.45E-05	4.86E-05	0.00E+00	3.87E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.69E-05	1.44E-05	1.92E-05	0.00E+00	1.73E-05	5.70E-09	3.99E-07	0.00E+00	3.32E-06	0.00E+00
Non-hazardous waste disposed	kg	6.89E-01	9.54E-02	1.96E+00	0.00E+00	5.55E-01	1.07E-04	3.22E-03	0.00E+00	1.08E+01	0.00E+00
Radioactive waste disposed	kg	2.06E-05	6.76E-08	2.58E-05	0.00E+00	6.24E-05	6.87E-10	1.84E-09	0.00E+00	1.33E-08	0.00E+00

[28] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Villaboard™ Lining, 9 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C2	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	7.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy re-covery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	7.00E-07	7.54E-08	9.19E-08	0.00E+00	6.17E-08	1.37E-09	1.83E-09	0.00E+00	1.09E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	2.54E-02	4.94E-04	8.84E-02	0.00E+00	1.48E-01	4.75E-06	1.33E-05	0.00E+00	9.45E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.03E+02	9.79E+00	2.69E+01	0.00E+00	2.69E+01	1.87E-02	1.80E-01	0.00E+00	2.20E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	3.06E-09	3.53E-10	7.16E-09	0.00E+00	2.29E-09	1.43E-12	6.61E-12	0.00E+00	6.55E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	8.65E-08	1.27E-08	3.87E-08	0.00E+00	2.64E-08	5.60E-11	2.66E-10	0.00E+00	2.36E-09	0.00E+00
Soil quality*	dimensionless	1.66E+02	3.98E+00	5.61E+00	0.00E+00	7.51E+00	1.14E-02	7.49E-02	0.00E+00	9.77E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for HomeRAB™ Pre-Cladding, 4.5 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	5.24E+00	3.74E-01	1.75E+00	-5.90E-01	0.00E+00	5.91E-02	1.15E-02	0.00E+00	1.10E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-4.23E-01	2.17E-04	5.14E-01	0.00E+00	0.00E+00	2.04E-03	1.65E-06	0.00E+00	7.85E-01	0.00E+00
GWP-luluc	kg CO_2 eq.	8.28E-04	1.54E-06	2.96E-04	0.00E+00	0.00E+00	1.85E-09	8.61E-08	0.00E+00	7.89E-07	0.00E+00
GWP-total	kg CO_2 eq.	4.82E+00	3.74E-01	2.26E+00	-5.90E-01	0.00E+00	6.12E-02	1.15E-02	0.00E+00	8.95E-01	0.00E+00
ODP	kg CFC 11 eq.	7.70E-08	5.03E-08	5.86E-08	0.00E+00	0.00E+00	4.08E-11	1.84E-09	0.00E+00	1.11E-08	0.00E+00
AP	mol H^+ eq.	3.20E-02	6.71E-03	1.41E-02	0.00E+00	0.00E+00	1.50E-04	7.09E-05	0.00E+00	8.66E-04	0.00E+00
EP-freshwater	kg P eq.	1.69E-04	7.38E-06	1.80E-04	0.00E+00	0.00E+00	1.93E-08	3.69E-07	0.00E+00	3.64E-06	0.00E+00
EP-marine	kg N eq.	7.64E-03	1.32E-03	1.97E-03	0.00E+00	0.00E+00	1.59E-05	1.54E-05	0.00E+00	2.55E-04	0.00E+00
EP-terrestrial	mol N eq.	8.38E-02	1.47E-02	2.07E-02	0.00E+00	0.00E+00	1.75E-04	1.72E-04	0.00E+00	2.79E-03	0.00E+00
POCP	kg NMVOC eq.	2.15E-02	4.07E-03	6.13E-03	0.00E+00	0.00E+00	8.58E-05	5.95E-05	0.00E+00	8.24E-04	0.00E+00
ADP-minerals & metals*	kg Sb eq.	3.25E-06	5.14E-07	1.93E-05	0.00E+00	0.00E+00	2.36E-09	3.59E-08	0.00E+00	4.42E-07	0.00E+00
ADP-fossil*	MJ	1.99E+01	4.59E+00	1.54E+01	0.00E+00	0.00E+00	1.62E+00	1.59E-01	0.00E+00	1.10E+00	0.00E+00
WDP	m^3	2.39E+01	3.37E+00	2.12E+01	0.00E+00	0.00E+00	4.42E+00	9.92E-02	0.00E+00	1.14E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[29]	kg CO_2 eq.	5.16E+00	3.69E-01	1.71E+00	-5.90E-01	0.00E+00	5.68E-02	1.13E-02	0.00E+00	1.08E-01	0.00E+00

Environmental Information for HomeRAB™ Pre-Cladding, 4.5 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.40E+01	7.01E-02	2.41E+00	0.00E+00	0.00E+00	5.65E-01	1.68E-03	0.00E+00	1.76E-02	0.00E+00
PERM	MJ	6.64E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.06E+01	7.01E-02	2.41E+00	0.00E+00	0.00E+00	5.65E-01	1.68E-03	0.00E+00	1.76E-02	0.00E+00
PENRE	MJ	2.05E+01	4.85E+00	1.59E+01	0.00E+00	0.00E+00	1.62E+00	1.68E-01	0.00E+00	1.16E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.05E+01	4.85E+00	1.59E+01	0.00E+00	0.00E+00	1.62E+00	1.68E-01	0.00E+00	1.16E+00	0.00E+00
SM	kg	2.64E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.15E-02	4.27E-04	6.04E-03	0.00E+00	0.00E+00	3.45E-05	2.43E-05	0.00E+00	1.94E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.56E-05	3.69E-06	2.02E-05	0.00E+00	0.00E+00	5.70E-09	2.00E-07	0.00E+00	1.66E-06	0.00E+00
Non-hazardous waste disposed	kg	4.36E-01	2.42E-02	5.10E+00	0.00E+00	0.00E+00	1.07E-04	1.61E-03	0.00E+00	5.41E+00	0.00E+00
Radioactive waste disposed	kg	1.31E-05	1.74E-08	2.58E-05	0.00E+00	0.00E+00	6.87E-10	9.18E-10	0.00E+00	6.65E-09	0.00E+00

[29] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for HomeRAB™ Pre-Cladding, 4.5 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	3.96E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	3.73E-07	1.94E-08	9.50E-08	0.00E+00	0.00E+00	1.37E-09	9.17E-10	0.00E+00	5.43E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	1.81E-02	1.27E-04	8.85E-02	0.00E+00	0.00E+00	4.75E-06	6.65E-06	0.00E+00	4.73E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	5.79E+01	2.55E+00	2.75E+01	0.00E+00	0.00E+00	1.87E-02	9.01E-02	0.00E+00	1.10E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	2.02E-09	9.17E-11	7.18E-09	0.00E+00	0.00E+00	1.43E-12	3.31E-12	0.00E+00	3.27E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	5.28E-08	3.30E-09	3.91E-08	0.00E+00	0.00E+00	5.60E-11	1.33E-10	0.00E+00	1.18E-09	0.00E+00
Soil quality*	dimensionless	9.48E+01	1.03E+00	5.90E+00	0.00E+00	0.00E+00	1.14E-02	3.74E-02	0.00E+00	4.89E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for RAB™ Board, 6 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	6.96E+00	5.05E-01	1.68E+00	-7.80E-01	0.00E+00	5.91E-02	1.53E-02	0.00E+00	1.47E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-5.36E-01	2.92E-04	8.40E-01	0.00E+00	0.00E+00	2.04E-03	2.21E-06	0.00E+00	1.05E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.10E-03	2.07E-06	2.96E-04	0.00E+00	0.00E+00	1.85E-09	1.15E-07	0.00E+00	1.05E-06	0.00E+00
GWP-total	kg CO_2 eq.	6.43E+00	5.05E-01	2.52E+00	-7.80E-01	0.00E+00	6.12E-02	1.53E-02	0.00E+00	1.19E+00	0.00E+00
ODP	kg CFC 11 eq.	1.02E-07	6.78E-08	5.17E-08	0.00E+00	0.00E+00	4.08E-11	2.46E-09	0.00E+00	1.48E-08	0.00E+00
AP	mol H^+ eq.	4.27E-02	9.05E-03	1.36E-02	0.00E+00	0.00E+00	1.50E-04	9.45E-05	0.00E+00	1.15E-03	0.00E+00
EP-freshwater	kg P eq.	2.22E-04	9.95E-06	1.78E-04	0.00E+00	0.00E+00	1.93E-08	4.91E-07	0.00E+00	4.85E-06	0.00E+00
EP-marine	kg N eq.	1.02E-02	1.78E-03	1.81E-03	0.00E+00	0.00E+00	1.59E-05	2.06E-05	0.00E+00	3.40E-04	0.00E+00
EP-terrestrial	mol N eq.	1.12E-01	1.99E-02	1.89E-02	0.00E+00	0.00E+00	1.75E-04	2.29E-04	0.00E+00	3.72E-03	0.00E+00
POCP	kg NMVOC eq.	2.88E-02	5.50E-03	5.70E-03	0.00E+00	0.00E+00	8.58E-05	7.94E-05	0.00E+00	1.10E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	4.26E-06	6.93E-07	1.90E-05	0.00E+00	0.00E+00	2.36E-09	4.79E-08	0.00E+00	5.90E-07	0.00E+00
ADP-fossil*	MJ	2.60E+01	6.19E+00	1.47E+01	0.00E+00	0.00E+00	1.62E+00	2.12E-01	0.00E+00	1.46E+00	0.00E+00
WDP	m^3	3.15E+01	4.55E+00	2.05E+01	0.00E+00	0.00E+00	4.42E+00	1.32E-01	0.00E+00	1.52E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[30]	kg CO_2 eq.	6.85E+00	4.98E-01	1.65E+00	-7.80E-01	0.00E+00	5.68E-02	1.50E-02	0.00E+00	1.44E-01	0.00E+00

Environmental Information for RAB™ Board, 6 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.89E+01	9.45E-02	2.40E+00	0.00E+00	0.00E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PERM	MJ	8.79E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.77E+01	9.45E-02	2.40E+00	0.00E+00	0.00E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PENRE	MJ	2.67E+01	6.54E+00	1.52E+01	0.00E+00	0.00E+00	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.67E+01	6.54E+00	1.52E+01	0.00E+00	0.00E+00	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
SM	kg	3.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.52E-02	5.76E-04	5.92E-03	0.00E+00	0.00E+00	3.45E-05	3.24E-05	0.00E+00	2.58E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.06E-05	4.98E-06	1.91E-05	0.00E+00	0.00E+00	5.70E-09	2.66E-07	0.00E+00	2.22E-06	0.00E+00
Non-hazardous waste disposed	kg	5.79E-01	3.27E-02	1.73E+00	0.00E+00	0.00E+00	1.07E-04	2.15E-03	0.00E+00	7.21E+00	0.00E+00
Radioactive waste disposed	kg	1.73E-05	2.34E-08	2.58E-05	0.00E+00	0.00E+00	6.87E-10	1.22E-09	0.00E+00	8.87E-09	0.00E+00

[30] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for RAB™ Board, 6 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	4.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	4.96E-07	2.62E-08	9.17E-08	0.00E+00	0.00E+00	1.37E-09	1.22E-09	0.00E+00	7.24E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	2.31E-02	1.71E-04	8.84E-02	0.00E+00	0.00E+00	4.75E-06	8.87E-06	0.00E+00	6.30E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	7.70E+01	3.44E+00	2.68E+01	0.00E+00	0.00E+00	1.87E-02	1.20E-01	0.00E+00	1.46E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	2.67E-09	1.24E-10	7.16E-09	0.00E+00	0.00E+00	1.43E-12	4.41E-12	0.00E+00	4.36E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	7.01E-08	4.45E-09	3.88E-08	0.00E+00	0.00E+00	5.60E-11	1.77E-10	0.00E+00	1.57E-09	0.00E+00
Soil quality*	dimensionless	1.32E+02	1.39E+00	5.59E+00	0.00E+00	0.00E+00	1.14E-02	4.99E-02	0.00E+00	6.52E-01	0.00E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for RAB™ Board, 9 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.04E+01	7.43E-01	1.68E+00	-1.17E+00	0.00E+00	5.91E-02	2.30E-02	0.00E+00	2.21E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-8.74E-01	4.30E-04	6.44E-01	0.00E+00	0.00E+00	2.04E-03	3.31E-06	0.00E+00	1.57E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.67E-03	3.05E-06	2.96E-04	0.00E+00	0.00E+00	1.85E-09	1.72E-07	0.00E+00	1.58E-06	0.00E+00
GWP-total	kg CO_2 eq.	9.53E+00	7.44E-01	2.33E+00	-1.17E+00	0.00E+00	6.12E-02	2.30E-02	0.00E+00	1.79E+00	0.00E+00
ODP	kg CFC 11 eq.	1.52E-07	9.99E-08	5.21E-08	0.00E+00	0.00E+00	4.08E-11	3.69E-09	0.00E+00	2.22E-08	0.00E+00
AP	mol H^+ eq.	6.35E-02	1.33E-02	1.36E-02	0.00E+00	0.00E+00	1.50E-04	1.42E-04	0.00E+00	1.73E-03	0.00E+00
EP-freshwater	kg P eq.	3.31E-04	1.47E-05	1.78E-04	0.00E+00	0.00E+00	1.93E-08	7.37E-07	0.00E+00	7.27E-06	0.00E+00
EP-marine	kg N eq.	1.52E-02	2.62E-03	1.82E-03	0.00E+00	0.00E+00	1.59E-05	3.09E-05	0.00E+00	5.10E-04	0.00E+00
EP-terrestrial	mol N eq.	1.67E-01	2.93E-02	1.90E-02	0.00E+00	0.00E+00	1.75E-04	3.44E-04	0.00E+00	5.57E-03	0.00E+00
POCP	kg NMVOC eq.	4.27E-02	8.10E-03	5.68E-03	0.00E+00	0.00E+00	8.58E-05	1.19E-04	0.00E+00	1.65E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	6.28E-06	1.02E-06	1.90E-05	0.00E+00	0.00E+00	2.36E-09	7.19E-08	0.00E+00	8.85E-07	0.00E+00
ADP-fossil*	MJ	3.80E+01	9.12E+00	1.47E+01	0.00E+00	0.00E+00	1.62E+00	3.17E-01	0.00E+00	2.20E+00	0.00E+00
WDP	m^3	4.54E+01	6.70E+00	2.06E+01	0.00E+00	0.00E+00	4.42E+00	1.98E-01	0.00E+00	2.27E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[31]	kg CO_2 eq.	1.02E+01	7.34E-01	1.65E+00	-1.17E+00	0.00E+00	5.68E-02	2.26E-02	0.00E+00	2.16E-01	0.00E+00

Environmental Information for RAB™ Board, 9 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	2.79E+01	1.39E-01	2.40E+00	0.00E+00	0.00E+00	5.65E-01	3.35E-03	0.00E+00	3.52E-02	0.00E+00
PERM	MJ	1.34E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	4.13E+01	1.39E-01	2.40E+00	0.00E+00	0.00E+00	5.65E-01	3.35E-03	0.00E+00	3.52E-02	0.00E+00
PENRE	MJ	3.90E+01	9.63E+00	1.52E+01	0.00E+00	0.00E+00	1.62E+00	3.35E-01	0.00E+00	2.31E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.90E+01	9.63E+00	1.52E+01	0.00E+00	0.00E+00	1.62E+00	3.35E-01	0.00E+00	2.31E+00	0.00E+00
SM	kg	5.33E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	2.29E-02	8.48E-04	5.93E-03	0.00E+00	0.00E+00	3.45E-05	4.86E-05	0.00E+00	3.87E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.08E-05	7.34E-06	1.92E-05	0.00E+00	0.00E+00	5.70E-09	3.99E-07	0.00E+00	3.32E-06	0.00E+00
Non-hazardous waste disposed	kg	8.73E-01	4.82E-02	1.93E+00	0.00E+00	0.00E+00	1.07E-04	3.22E-03	0.00E+00	1.08E+01	0.00E+00
Radioactive waste disposed	kg	2.61E-05	3.45E-08	2.58E-05	0.00E+00	0.00E+00	6.87E-10	1.84E-09	0.00E+00	1.33E-08	0.00E+00

[31] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for RAB™ Board, 9 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	8.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	7.42E-07	3.86E-08	9.18E-08	0.00E+00	0.00E+00	1.37E-09	1.83E-09	0.00E+00	1.09E-08	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	3.34E-02	2.52E-04	8.84E-02	0.00E+00	0.00E+00	4.75E-06	1.33E-05	0.00E+00	9.45E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	1.16E+02	5.06E+00	2.69E+01	0.00E+00	0.00E+00	1.87E-02	1.80E-01	0.00E+00	2.20E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	4.04E-09	1.82E-10	7.16E-09	0.00E+00	0.00E+00	1.43E-12	6.61E-12	0.00E+00	6.55E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	1.06E-07	6.56E-09	3.86E-08	0.00E+00	0.00E+00	5.60E-11	2.66E-10	0.00E+00	2.36E-09	0.00E+00
Soil quality*	dimensionless	1.86E+02	2.05E+00	5.61E+00	0.00E+00	0.00E+00	1.14E-02	7.49E-02	0.00E+00	9.77E-01	0.00E+00

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**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground

Environmental Information for Hardie™ Ceramic Tile Underlay, 6 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	4.85E+00	8.76E-01	1.68E+00	-6.60E-01	0.00E+00	5.91E-02	1.53E-02	0.00E+00	1.47E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-4.61E-01	4.98E-04	9.65E-01	0.00E+00	0.00E+00	2.04E-03	2.21E-06	0.00E+00	9.26E-01	0.00E+00
GWP-luluc	kg CO_2 eq.	5.38E-04	3.67E-06	2.96E-04	0.00E+00	0.00E+00	1.85E-09	1.15E-07	0.00E+00	1.05E-06	0.00E+00
GWP-total	kg CO_2 eq.	4.39E+00	8.77E-01	2.64E+00	-6.60E-01	0.00E+00	6.12E-02	1.53E-02	0.00E+00	1.07E+00	0.00E+00
ODP	kg CFC 11 eq.	8.79E-08	1.18E-07	5.13E-08	0.00E+00	0.00E+00	4.08E-11	2.46E-09	0.00E+00	1.48E-08	0.00E+00
AP	mol H^+ eq.	2.54E-02	1.55E-02	1.36E-02	0.00E+00	0.00E+00	1.50E-04	9.45E-05	0.00E+00	1.15E-03	0.00E+00
EP-freshwater	kg P eq.	1.80E-04	1.75E-05	1.78E-04	0.00E+00	0.00E+00	1.93E-08	4.91E-07	0.00E+00	4.85E-06	0.00E+00
EP-marine	kg N eq.	6.71E-03	3.04E-03	1.80E-03	0.00E+00	0.00E+00	1.59E-05	2.06E-05	0.00E+00	3.40E-04	0.00E+00
EP-terrestrial	mol N eq.	7.38E-02	3.40E-02	1.88E-02	0.00E+00	0.00E+00	1.75E-04	2.29E-04	0.00E+00	3.72E-03	0.00E+00
POCP	kg NMVOC eq.	1.88E-02	9.42E-03	5.70E-03	0.00E+00	0.00E+00	8.58E-05	7.94E-05	0.00E+00	1.10E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	3.03E-06	1.24E-06	1.90E-05	0.00E+00	0.00E+00	2.36E-09	4.79E-08	0.00E+00	5.90E-07	0.00E+00
ADP-fossil*	MJ	3.79E+01	1.08E+01	1.47E+01	0.00E+00	0.00E+00	1.62E+00	2.12E-01	0.00E+00	1.46E+00	0.00E+00
WDP	m^3	2.21E+01	7.89E+00	2.05E+01	0.00E+00	0.00E+00	4.42E+00	1.32E-01	0.00E+00	1.52E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[32]	kg CO_2 eq.	4.77E+00	8.65E-01	1.64E+00	-6.60E-01	0.00E+00	5.68E-02	1.50E-02	0.00E+00	1.44E-01	0.00E+00

Environmental Information for Hardie™ Ceramic Tile Underlay, 6 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	1.64E+01	1.63E-01	2.40E+00	0.00E+00	0.00E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PERM	MJ	7.01E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.34E+01	1.63E-01	2.40E+00	0.00E+00	0.00E+00	5.65E-01	2.23E-03	0.00E+00	2.35E-02	0.00E+00
PENRE	MJ	3.83E+01	1.14E+01	1.52E+01	0.00E+00	0.00E+00	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.83E+01	1.14E+01	1.52E+01	0.00E+00	0.00E+00	1.62E+00	2.23E-01	0.00E+00	1.54E+00	0.00E+00
SM	kg	3.28E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.03E-02	1.02E-03	5.92E-03	0.00E+00	0.00E+00	3.45E-05	3.24E-05	0.00E+00	2.58E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.63E-05	8.81E-06	1.91E-05	0.00E+00	0.00E+00	5.70E-09	2.66E-07	0.00E+00	2.22E-06	0.00E+00
Non-hazardous waste disposed	kg	5.10E-01	5.84E-02	1.50E+00	0.00E+00	0.00E+00	1.07E-04	2.15E-03	0.00E+00	7.21E+00	0.00E+00
Radioactive waste disposed	kg	1.21E-05	4.13E-08	2.58E-05	0.00E+00	0.00E+00	6.87E-10	1.22E-09	0.00E+00	8.87E-09	0.00E+00

[32] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Ceramic Tile Underlay, 6 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	5.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	2.88E-07	4.61E-08	9.14E-08	0.00E+00	0.00E+00	1.37E-09	1.22E-09	0.00E+00	7.24E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	1.82E-02	3.02E-04	8.84E-02	0.00E+00	0.00E+00	4.75E-06	8.87E-06	0.00E+00	6.30E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	4.04E+01	5.99E+00	2.68E+01	0.00E+00	0.00E+00	1.87E-02	1.20E-01	0.00E+00	1.46E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	1.90E-09	2.16E-10	7.15E-09	0.00E+00	0.00E+00	1.43E-12	4.41E-12	0.00E+00	4.36E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	4.46E-08	7.79E-09	3.89E-08	0.00E+00	0.00E+00	5.60E-11	1.77E-10	0.00E+00	1.57E-09	0.00E+00
Soil quality*	dimensionless	1.18E+02	2.43E+00	5.57E+00	0.00E+00	0.00E+00	1.14E-02	4.99E-02	0.00E+00	6.52E-01	0.00E+00

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Environmental Information for Hardie™ Groove Lining, 7.5 mm thick

Potential environmental impact – mandatory indicators according to EN 15804+A2

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	8.15E+00	6.10E-01	1.68E+00	-8.30E-01	8.14E-01	5.91E-02	1.91E-02	0.00E+00	1.84E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	-7.05E-01	3.53E-04	2.09E-01	0.00E+00	2.26E-02	2.04E-03	2.76E-06	0.00E+00	1.16E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	1.28E-03	2.51E-06	2.96E-04	0.00E+00	7.16E-04	1.85E-09	1.44E-07	0.00E+00	1.31E-06	0.00E+00
GWP-total	kg CO_2 eq.	7.44E+00	6.10E-01	1.89E+00	-8.30E-01	8.38E-01	6.12E-02	1.91E-02	0.00E+00	1.34E+00	0.00E+00
ODP	kg CFC 11 eq.	1.23E-07	8.20E-08	5.17E-08	0.00E+00	8.31E-08	4.08E-11	3.07E-09	0.00E+00	1.85E-08	0.00E+00
AP	mol H^+ eq.	5.09E-02	1.09E-02	1.36E-02	0.00E+00	1.15E-02	1.50E-04	1.18E-04	0.00E+00	1.44E-03	0.00E+00
EP-freshwater	kg P eq.	2.82E-04	1.20E-05	1.78E-04	0.00E+00	3.24E-04	1.93E-08	6.14E-07	0.00E+00	6.06E-06	0.00E+00
EP-marine	kg N eq.	1.19E-02	2.15E-03	1.81E-03	0.00E+00	8.63E-04	1.59E-05	2.57E-05	0.00E+00	4.25E-04	0.00E+00
EP-terrestrial	mol N eq.	1.30E-01	2.40E-02	1.89E-02	0.00E+00	8.17E-03	1.75E-04	2.87E-04	0.00E+00	4.65E-03	0.00E+00
POCP	kg NMVOC eq.	3.35E-02	6.65E-03	5.54E-03	0.00E+00	2.83E-03	8.58E-05	9.92E-05	0.00E+00	1.37E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	4.97E-06	8.39E-07	1.90E-05	0.00E+00	1.38E-05	2.36E-09	5.99E-08	0.00E+00	7.37E-07	0.00E+00
ADP-fossil*	MJ	3.07E+01	7.49E+00	1.47E+01	0.00E+00	1.46E+01	1.62E+00	2.65E-01	0.00E+00	1.83E+00	0.00E+00
WDP	m^3	3.67E+01	5.50E+00	2.05E+01	0.00E+00	8.84E-01	4.42E+00	1.65E-01	0.00E+00	1.89E+00	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										

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Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
GWP-GHG[33]	kg CO_2 eq.	8.03E+00	6.02E-01	1.65E+00	-8.30E-01	7.83E-01	5.68E-02	1.88E-02	0.00E+00	1.80E-01	0.00E+00

Environmental Information for Hardie™ Groove Lining, 7.5 mm thick

Use of resources

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
PERE	MJ	2.08E+01	1.14E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	2.79E-03	0.00E+00	2.93E-02	0.00E+00
PERM	MJ	1.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.09E+01	1.14E-01	2.40E+00	0.00E+00	1.10E+00	5.65E-01	2.79E-03	0.00E+00	2.93E-02	0.00E+00
PENRE	MJ	3.16E+01	7.91E+00	1.52E+01	0.00E+00	1.56E+01	1.62E+00	2.79E-01	0.00E+00	1.93E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.16E+01	7.91E+00	1.52E+01	0.00E+00	1.56E+01	1.62E+00	2.79E-01	0.00E+00	1.93E+00	0.00E+00
SM	kg	4.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	0.00E+00	INA	0.00E+00
FW	m^3	1.89E-02	6.96E-04	5.92E-03	0.00E+00	8.58E-03	3.45E-05	4.05E-05	0.00E+00	3.23E-04	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water										

Waste production and output flows

Waste production

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.47E-05	6.02E-06	1.91E-05	0.00E+00	1.34E-05	5.70E-09	3.33E-07	0.00E+00	2.77E-06	0.00E+00
Non-hazardous waste disposed	kg	7.32E-01	3.95E-02	1.78E+00	0.00E+00	4.32E-01	1.07E-04	2.69E-03	0.00E+00	9.02E+00	0.00E+00
Radioactive waste disposed	kg	2.11E-05	2.83E-08	2.58E-05	0.00E+00	4.85E-05	6.87E-10	1.53E-09	0.00E+00	1.11E-08	0.00E+00

[33] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Information for Hardie™ Groove Lining, 7.5 mm thick

Output flows

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	9.21E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional Environmental Impact Indicators

Results per functional or declared unit											
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	C1	C2	C3	C4	D
Particulate matter	disease incidence	6.04E-07	3.17E-08	9.16E-08	0.00E+00	4.80E-08	1.37E-09	1.53E-09	0.00E+00	9.06E-09	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	2.92E-02	2.07E-04	8.84E-02	0.00E+00	1.15E-01	4.75E-06	1.11E-05	0.00E+00	7.88E-05	0.00E+00
Eco-toxicity (fresh-water)*	CTUe	9.44E+01	4.16E+00	2.68E+01	0.00E+00	2.09E+01	1.87E-02	1.50E-01	0.00E+00	1.83E+00	0.00E+00
Human toxicity potential - cancer effects*	CTUh	3.43E-09	1.50E-10	7.16E-09	0.00E+00	1.78E-09	1.43E-12	5.51E-12	0.00E+00	5.46E-11	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	8.70E-08	5.39E-09	3.80E-08	0.00E+00	2.06E-08	5.60E-11	2.22E-10	0.00E+00	1.97E-09	0.00E+00
Soil quality*	dimensionless	1.33E+02	1.69E+00	5.59E+00	0.00E+00	5.84E+00	1.14E-02	6.24E-02	0.00E+00	8.15E-01	0.00E+00

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References

Australasia EPD. (2018). Instructions of the Australasian EPD Programme v3.0. A regional annex to the General Programme Instructions of the International EPD System. Australasia EPD.

Australasia EPD Program. (2018). Guidance on the use of background LCI data. Australasia EPD.

AusLCI. (2017). AusLCI System Shadow Database v1.27.

Australian Life Cycle Assessment Society. (2019). Australian Life Cycle Inventory (AusLCI) – v1.31.

Australian Life Cycle Inventory Database Initiative (AusLCI). (2019). Guidelines for Data Development for an Australian Life Cycle Inventory Database, Data Standard.

British Standards Institution. (2014). Sustainability of construction works. - Environmental product declarations - Product Category Rules for concrete and concrete elements, BS EN16757:2017. British Standards Institution.

Cooke, A. M. (2000). Durability of Autoclaved Cellulose Fiber Cement Composites. Retrieved from http://fibrecementconsulting.com/publications/990925.DurabilityPaper.pdf

Dauriat, A., Coulon, A., Bitar, J., Liao, X., & Delerce-Mauris, C. (2021). GCCA Industry EPD Tool for Cement and Convrete. Global Cement and Concrete Association. Switzerland: Quantis.

Department of the Environment. (2021). National Greenhouse Accounts Factors - Australian National Greenhouse Accounts. Australian Government. Retrieved from www.environment.gov.au

ecoinvent Centre. (2021). The ecoinvent Database. Retrieved from https://www.ecoinvent.org/database/database.html

EPD International. (2019). c-PCR-001 Cement and building limes (EN 16908).

EPD International. (2019). c-PCR-003 Concrete and concrete elements (EN 16757).

EPD International. (2019). Product Category Rules (PCR) 2019:14, v1.1. EPD International.

European Standard. (2019). EN 15804:2012+A2:2019. BSI Standards Limited 2020.

Frischknecht, R. (2007). The Environmental Relevance of Capital Goods in Life Cycle Assessments of Products and Services. Int. J LCA.

ISO. (2006). ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Geneva: International Organization for Standardization (ISO).

ISO. (2006). ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.

ISO. (2006). ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

Lstiburek, J. (2006). BSD-144: Increasing the Durability of Building Constructions. Building Science Corporation. Retrieved from https://www.buildingscience.com/documents/digests/bsd-144-increasing-the-durability-of-building-constructions

World Green Building Council (2019), Bringing embodied carbon upfront, Coordinated action for the building and construction sector to tackle embodied carbon

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Products from James Hardie New Zealand

Product: Stria™ Cladding

Program: EPD Australasia — www.epd-australasia.com
Program Operator: EPD Australasia
EPD Registration Number: S-P-03582

Publication Date: 17.07.2023
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

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